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**DEPARTMENT OF THE ARMY  
OFFICE OF THE ADJUTANT GENERAL  
WASHINGTON, D.C. 20310**

IN REPLY REFER TO

AGAM-P (M) (15 May 68) FOR OT RD 681085

24 May 1968

**SUBJECT: Operational Report - Lessons Learned, Headquarters, 4th Battalion, 60th Artillery, Period Ending 31 January 1968 (U)**

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1. Subject report is forwarded for review and evaluation in accordance with paragraph 5b, AR 525-15. Evaluations and corrective actions should be reported to ACSFOR OT RD, Operational Reports Branch, within 90 days of receipt of covering letter.
2. Information contained in this report is provided to insure appropriate benefits in the future from lessons learned during current operations and may be adapted for use in developing training material.

BY ORDER OF THE SECRETARY OF THE ARMY:

*Kenneth G. Wickham*

**KENNETH G. WICKHAM  
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DEPARTMENT OF THE ARMY  
HEADQUARTERS, 4TH BATTALION, 60TH ARTILLERY  
APO 96238

AVGK-AP-S3

31 January 1968

SUBJECT: Operational Report for Quarterly Period Ending 31 January 1968,  
(RC3-CSFOR-65) (UIC-WFUZAA) (U)

TO: See Distribution

**SECTION 1 (C) SIGNIFICANT ORGANIZATION ACTIVITIES**

1. (C) General:

a. During the reporting period the 4th Battalion, (AW)(SP), 60th Artillery with attached Battery E, (.50 Cal Machine Gun), 41st Artillery (UIC-WFUZAA) remained assigned to I Field Force Vietnam, attached to I Field Force Vietnam Artillery, and further attached, less operational control, to 41st Artillery Group. Effective 2 January 1968, Battery B (SLT), 29th Artillery (UIC-WC4QTO) was attached, less operational control, to the 4th Battalion (AW)(SP), 60th Artillery<sup>1</sup>. Operational control of all battalion assigned and attached elements remains with I Field Force Vietnam, Artillery. Elements of the battalion are further attached for maintenance support and training with personnel and administrative actions, to include military justice, remaining with the battalion. Quarters and all classes of supply, less TO&E and TA 50-901, are the responsibility of the major subordinate command in whose area elements are deployed.

b. Headquarters and Headquarters Battery are attached to the 41st Artillery Group. Battery A with the 2nd platoon is attached to the 41st Artillery Group with operational control of the 2nd platoon exercised by the 6th Bn, 32nd Arty. The 1st platoon of Battery A is attached to the 3rd Bn, 506th Inf, with operational control exercised by the 3rd Battalion, 506th Infantry. Battery B with the 2nd platoon is attached to the 52nd Artillery Group, with operational control exercised by the 4th Infantry Division Artillery. The 1st platoon of Battery B is attached to the 41st Artillery Group with operational control exercised by the 1st Cavalry Division Artillery. Battery C is attached to the 41st Artillery Group with operational control exercised by the 1st Cavalry Division (AM) Artillery. Battery D is attached to the 52nd Artillery Group, with operational control exercised by the 4th Infantry Division Artillery.

Footnote: 1 (See Incl 1)

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(RCS-CARON-55) (MIC-WTUEAM) (U)

c. Battery E. (IN), 41st Artillery, was employed as follows: 1 section attached to Battery A Headquarters, Tuy Hoa; 1 section attached to the 1st platoon, Battery A, Phan Thiet; 2 sections attached to Battery C with 1 section at Bong Song and 1 section in the I Corps Tactical Zone; 1 section attached to B Battery and located at Pleiku and An Khe; and 1 section attached to Battery D located at Camp Nhari. In addition, Battery E, 41st Artillery, mans 1 section (maintenance floats) in support of the Qui Nhon Sub-Area Command.

d. Battery B (SLT), 29th Artillery, was deployed as follows: 1st platoon (+) with platoon headquarters at Pleiku, is attached to Battery B, 4th Bn, 60th Arty with operational control exercised by the 4th Infantry Division Artillery and employed throughout the division tactical area of operations. The 2nd platoon, with platoon headquarters at LZ English is attached to Battery C and employed throughout the Pershing Area of operations. The 3rd platoon (-) with platoon headquarters at Tuy Hoa, is attached to Battery A and employed on the coastal plain from Phan Thiet to the Junction of Highway 1 and 6B.

e. During the reporting period, the battalion operated at widely separated locations in support of Free World Military Assistance Force in the Republic of Vietnam, I and II Corps Tactical Zones. The battalion's tactical deployment at the end of the reporting period is reflected at Inclosure 2.

f. The battalion employs four (4) maintenance float, twin 40MM, M42's and two (2) maintenance float Quad .50, M55's in support of the Qui Nhon Sub-Area Command. Elements are manned by personnel from Headquarters Battery and Headquarters, Battery E, (MG) 41st Artillery in providing the maximum number of Automatic Weapons for support of critical installations within the Qui Nhon Area.

g. Elements of the battalion participated in the following major operations: MING HO IX, HUSTLER, PERSHING, LICKENHUR, CONNIEFOR, WILWRIGHT, BYRD, ROLLING, DAZZLEM, and the 1st Cavalry Division (AM) deployment into the I Corps Tactical Zone.

2. (C) Intelligence: The wide dispersal of the battalion's elements and the TO&E under which it is organized preclude effective and efficient centralized intelligence efforts. Close coordination is maintained with the supported units to insure receipt of current intelligence on the local area of operations and the timely evaluation of information contributed to the intelligence collecting effort. The intelligence gathering effort of the Battalion S2 is concentrated in the Qui Nhon area. Intelligence information is gathered by frequent liaison visits to the Capitol ROK Infantry Division, Qui Nhon Sub-Area Command, Special Forces Detachment, B-22, MACV Sub-Sector Advisory Team 27, Naval

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Intelligence Liaison Officer and the 22nd ARVN Infantry Division. Information gathered from these sources is forwarded to higher headquarters in the battalion's daily intelligence summary. Intelligence regarding the II Corps Tactical Zone is received in daily INTSUMs and weekly PERINTREPS, from Headquarters I Field Force Vietnam.

3. (C) Operations and Training Activities:

a. Operations: All operational elements of the 4th Battalion, 60th Artillery and attached units, were tactically committed for the ninety-two (92) days of this reporting period. During this quarter, the employment of the widely dispersed automatic weapons and searchlights was examined to determine if they were being employed in the most profitable manner. After careful consideration of tactical doctrine and unit experience factors gained in Vietnam, it was determined that the systems are basically well employed. A second letter of recommended employment to commanders having operational control of battalion elements was distributed to continually improve automatic weapons and searchlight support.<sup>2</sup> An area of considerable concern has been the extensive use of the Duster in the convoy escort role. Though such employment is tactically sound, the practice results in heavy wear and tear on the Duster and excessive down time due to the difficulty experienced in obtaining repair parts. Through the cooperation of commanders exercising operational control, the truck mounted M55 has assumed the major portion of the convoy escort duties.

b. Tactical practices resulting in consistent mission accomplishment have been identified by the type missions performed by this unit. Mission accomplishment when considering tactical success must be based on utilization of the weapon system. The majority of the assigned missions performed by elements of this battalion are security missions and the mere presence of these automatic weapons have proven to be a deterrent to enemy action. The following resume' of tactical practices, coupled with a thorough knowledge of the tactical situation, has consistently resulted in successful mission accomplishment.

(1) Work party Security (M42): The M42 has been employed with consistent success on this type mission. The mission normally requires employment outside secure areas and should be employed by section. Employment in pairs provides mutual supporting fires as well as a limited recovery capability.

(2) Engineer Work Party Security (M55): The M55 has limited cross-country mobility; however, the M55 can often provide support where the M42 is restricted due to road and bridge limitations.

Footnote:2 (See Incl 3)

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(3) Artillery Raids: Field artillery batteries are particularly vulnerable to ground attack during occupation of position. The M42 and M55 accompany artillery batteries providing convoy escort enroute and security for the battery during its preparatory firing phase. To ensure tactical success the automatic weapons commander will:

(a) Conduct a map reconnaissance of the position to determine the best fields of fire.

(b) Determine possible avenues of attack and plan accordingly.

(c) Thoroughly brief section leaders on the local terrain configuration of position area, tactical situation and ensure interlocking fields of fire.

(d) Closely coordinate routes of entry and sectors of fire with the supported field artillery commander.

(4) Automatic Weapons Raids (M42/M55): The M42 and M55 have conducted Automatic Weapons Raids on predicted and confirmed enemy locations. The raids are usually performed by two or more automatic weapons firing elements accompanied by an infantry platoon size element of a cavalry troop for security. The M42's are accompanied by one (1) of the automatic weapons platoon officers to facilitate command and control since coordination is of the utmost importance. The automatic weapons commander secures pertinent target intelligence from the supported commander or artillery LNO, and delivers fire on area and point type targets. Usually an aerial observer is provided to automatic weapons commander to assist in target surveillance, and engagement of targets of opportunity that may develop. The M55 can also be airlifted into position to perform this mission.

(5) Direct Support of Infantry: Under most terrain conditions, the M42 with its excellent mobility, is readily adaptable to joint operations with infantry platoons or companies. Dismounted infantry habitually ride the M42 as near to the objective as possible. Thus making preparatory and covering fires readily available to the infantry commander. Additionally, the M42 is used as a base of fire and its pin-point accuracy makes it extremely effective in destroying bunkers or similar point targets. Prior to the operation, the automatic weapons commander and the infantry commander must closely map recon the objective, determine intermediate objectives and assembly point.. Helicopter reconnaissance is preferable, however, increased air activity may alert enemy forces of a pending operation. During the hours of darkness the M42 requires infantry protection. The capabilities, limitations and characteristics of the M42 must be completely explained to the supported commander and necessary logistical support arrangements completed prior to execution of the operation.

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(6) Perimeter Defense: To achieve tactical success in perimeter defense duties the M42 and M55 must be employed with suitable fields of fire. Accurate range cards depicting targets of opportunity, likely avenues of approach and final protective fires must be constructed and thoroughly understood by all crew members. Interlocking fires should be coordinated with other automatic weapons fire of the supported unit. Infantry protection of the automatic weapons is desirable; however, troops should not be positioned directly in the line of fire or forward of automatic weapons for safety reasons. Open areas are best covered by the M42 and dense jungle or undergrowth can be more easily covered by the M55 Machine Gun. Frequent interdiction of selected targets by the M42 or the Quad .50 serve to create a psychological effect on the enemy and discourage ground attacks.

(7) Quick Reaction Force: It is not unusual for the M42 performing perimeter defense duties to assume a secondary role as a quick reaction force. The success of these operations depend completely upon the planning and subsequent execution of the plan. The mission, route of travel, target designation, terrain features and locations of friendly forces must be closely coordinated with the supported commanders. It is incumbent upon the supported commander to establish liaison with adjacent units and inform automatic weapons personnel of the location of the target, friendly patrol positions and other pertinent information.

(8) Operations with ROK Forces: The tactical success achieved in operations with the Republic of Korea Forces closely parallels the operations with U.S. Forces. Elements of this command perform perimeter defense duties with Korean Infantry to protect both Korean and United States Artillery batteries. In either case, the U.S. Artillery Liaison Officer attached to the ROK Division Headquarters must closely monitor the patrol plans of the Korean Force and the desires of the Commander. This information must be disseminated through the chain of command to the automatic weapons commander. Likewise the automatic weapons squad, section or platoon leader must continually advise the supported Commander to ensure the necessary information is being received, plotted, and promptly updated. Recently two M42's supported, by fire only, a ROK maneuver unit in the Phu Cat area. The successful completion of the mission required close coordination between the automatic weapons platoon leader and the ROK unit Commander. The platoon leader made personal liaison with the ROK Fire Direction Center, where an interpreter received the fire requests and translated them into English for the platoon leader. The ROK Force Commander was highly pleased with the fire support provided.

(9) Automatic weapons should, insofar as practicable, be employed in pairs for mutual support, limited recovery capability, and section integrity.

c. At Inclosure 4 is a chronological sequence of major actions and events during this reporting period.

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d. Significant Events:

(1) On 27 November 1967, B Section, Battery E (MG), 41st Artillery was released from OPCOM to the 1st Air Cav Div (AM), Bong Song area and placed OFCON to the 1st Bde, 101st Airborne Div, Phan Rang area, for the purpose of escorting convoys from Bao Loc to Phouc Vinh. The movement was expected to last approximately two weeks. However, on 4 January 1968, upon request of the 1st Bde, 101st Airborne Div the commitment was extended until 17 January 1968. On 120755H January 1968, E10 (M55) was ambushed at coordinates BN 450414 while performing convoy escort for 2nd Squadron, 17th Cavalry. This was the first time that claymore mines had been used against elements of this battalion. The mine was command detonated and positioned to cause injury to the M55 quad .50 crew. The attack resulted in minor injury to the crew. No damage to the M55 quad .50 and extensive damage to the two and one half ton prime mover. E10 remained operational during the attack and received credit for the capture of two POW's. On 191350H January 1968, B Section closed at Camp Townes to terminate a successful mission.

(2) On 29 Dec 1967 this Headquarters was informed to provide automatic weapons support for an artillery program being developed by Headquarters, Qui Nhon Support Command (Provisional). Support was provided by utilizing three depot stock M42 Dusters manned by Headquarters Battery personnel. The initial purpose of the NS.C "Artillery Destruction Program" was to harass, interdict, interrupt, and frustrate enemy activities and movements in and around the city of Qui Nhon, and adjacent military activities. The program included the experimental firing of the M42 aboard a Landing Craft Mechanized. A study regarding the feasibility of utilizing a water-borne firing platform is at Inclosure 5. The initial target list and schedule of fires prepared by NS.C did not fully exploit the capabilities of the M42 Dusters. However, through close coordination with the supported unit, the planning of automatic weapons support has more recently been accomplished based on the recommendations of this headquarters. Upon termination of the NS.C cease fire the M42 Dusters supporting NS.C were used as an economy of force element to detect and engage the enemy. The M42 Dusters have fired extensive observed and reconnaissance by fire missions within this area and have been credited by the Security Officer of NS.C as having significantly reduced the number and effectiveness of enemy actions in the Qui Nhon area.

(3) On 21 January 1968, the battalion deployed four searchlights to the I Corps Tactical Zone to support the 1st Cav Div (AM). The four searchlights and four quad .50's departed LZ English (Bong Song Area) for the Huig-Phu Bai area by C130 aircraft. The four M42 Dusters departed Qui Nhon harbor 24 Jan 68 by sea for Da Nang. The movement was made without incident and the elements continue supporting the 1st Cav Div (AM) in the Quang Tri area of the I Corps Tactical Zone at the close of this reporting period.

(4) On 30 January 1968 this unit was given the mission of providing additional convoy protection for 8th Transportation Group Convoys

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between An Khe and Pleiku during daylight hours and providing three (3) M55 Quad .50's for camp security of An Khe and of Camp Enari each night. This was accomplished by stationing three M55's at An Khe and three (3) at Camp Enari.

e. Following is a breakdown of missions by type since 1 November 1967.

(1) M42 Duster

<u>TYPE MISSION</u>	<u>TOTAL MISSIONS</u>
Interdiction	4550
Counterfire	17
Reconnaissance by fire	73
Confirmed	211
Other (Training)	<u>440</u>
Total	5,291

(2) M55 Quad Fifty

<u>TYPE MISSION</u>	<u>TOTAL MISSIONS</u>
Interdiction	1182
Counterfire	13
Confirmed	18
Other (Training)	<u>110</u>
Total	1,323

(3) AN/MSS-3

<u>TYPE MISSION</u>	<u>NO. MISSIONS</u>
H & I Visible	15360
H & I Infra-red	4261
On Call, Visible	1169
On Call, Infra-red	<u>84</u>
Total	20,874

f. Training

(1) During the reporting period, special emphasis was placed on mass orientation and training of newly assigned personnel. The rotation of the original members of the battalion during the months of December 1967, January and February 1968 resulted in 620 filler personnel being received during the reporting period. All personnel assigned a duty in MOS 13F, received training to provide the basic required knowledge necessary to perform as a M42 Duster or a M55 Quad .50 crewman. The training objective was to

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train replacements or automatic weapons gun crewmen to perform their duties as members of effective, coordinated and combat ready team and in as short a time as possible. Training not essential to the performance of duties under tactical conditions was eliminated from the adopted training schedule. Polish, rapidity, versatility and more detailed knowledge of the twin 40MM, M42 or Quad .50 Cal M55 will be obtained as additional training time becomes available to the unit. Two-hundred-fifty-seven (257) replacements received training in duty MOS 13F as outlined in Inclosure 6.

(2) The battalion conducted two courses of instruction on the M55 Machine Gun for units of the 8th Transportation Group in Qui Nhon. The first course was conducted during the period 13 November 1967 through 18 November 1967 for fifteen (15) personnel of the 27th Transportation Battalion and ten (10) personnel of the 54th Transportation Battalion. The second course was conducted during the period 4 December 1967 through 9 December for (10) personnel of the 124th Transportation Battalion. Students received forty-eight hours of instruction as outlined in Inclosure 7.

(3) The wide dispersion of the battalions elements is not conducive to a centralized training program. Therefore, the program is designed for training to be conducted by the squads or section leaders with records centralized and maintained at the battery headquarters. All unit personnel undergo forty hours of mandatory training each month. Air defense training is included in the mandatory training subject which is to provide refresher and basic background training in air defense techniques. Commanders are authorized to deviate from the training program when the operational commitments of their elements justify such deviations. However, without exception replacement orientation, replacement training and crew proficiency training is accomplished as directed.

(4) During this quarter four lieutenants attended a three day forward observer course conducted by the 2nd Battalion, 17th Artillery. This included ground and aerial observing, directing ARV and adjusting Naval gunfire.

(5) This Battalion did not conduct unit training during this reporting period. However, training was conducted at the squad and section level. All fire units were tactically committed throughout the entire quarter.

(6) Chemical: N/A

(7) Psywar: N/A

4. (U) Logistics:

a. Support: There has been no change in the status of logistical support for the battalion during the reporting period. Logistical support of all classes of supply was maintained for organic and attached units located at Camp Townes. Quarters and all classes of supply, less TO&E and MA 50-901,

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are the responsibility of major subordinate commands in whose areas elements of this battalion are deployed; however, supplies not available through the major subordinate commands are supplied by the battalion S4, in order to ensure that a combat ready posture is maintained by all battalion elements.

b. Maintenance:

(1) 41st Signal Detachment and 544th Signal Battalion continues to provide direct support signal maintenance for this battalion. Their stockage of repair parts has increased since last quarter and are providing more timely repairs. The lack of FM Radio Maintenance Floats continues to be a matter of grave concern as the T0&E of this organization provides for very little flexibility in the utilization of the authorized FM radio sets. The AN/GRC-19 radios continue to present maintenance problems due to a shortage of repair parts and the equipment age.

(2) Direct support for automotive, armament and fire control items continues to be provided by the 560th Maintenance Company in the Qui Nhon and the 149th Maintenance Company in Pleiku. The shortage of repair and replacement parts for the M42 Duster and the M55 Quad .50 continues to be marginally adequate. During this reporting period M42's have been dead-lined for as long as 22 days due to non-availability of replacement engines.

(3) 554th Light Maintenance Company continues to provide AF/M63-3 (searchlight) support. Their stockage of repair parts has decreased since last quarter. The outstanding support previously provided has been adversely affected by the lack of readily available repair parts. Support is adequate; however, equipment down time has increased.

c. Supply: Major items of equipment turned in, received, and due out during the period 1 November 1967 to January 1968 are listed at Inclosure 8.

d. Ammunition: The following number of rounds has been fired by the sixty-seven (67) M42 Dusters and the twenty-six (26) M55 Quads manned by this battalion during the reporting period:

(1) 40MM

<u>TOTAL ROUNDS FIRED</u>	<u>AVG # OF RDS FIRED PER M42</u>
103,966	1,552

(2) .50 Cal

<u>TOTAL ROUNDS FIRED</u>	<u>AVG # OF RDS FIRED PER M55</u>
575,155	23,006

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 (RSP-CIAFM 16) (UIC-WENUMA) (U)

e. Base Camp Development: The majority of the base camp improvements on Camp Townes are accomplished through the unit self-help programs.

(1) Site Development: During the reporting period, unit personnel installed perimeter lighting, which became operational upon installation of two (2) 100KW generators. In addition, approximately one-third of the post road network has been resurfaced. Concrete sidewalks have been laid in approximately 75% of the battalion area. The wiring of all buildings on Camp Townes with approved wiring is 90% complete.

(2) Construction completed during this quarter:

- (a) Camp Townes Chapel.
- (b) Camp Townes Post Exchange.
- (c) 4th Bn, 60th Arty Bde.

(3) Planned construction: A base development plan has been submitted and approved by Qui Nhon Sub-Area Engineers. Of the overall base development plan, construction approval has been received for a Battalion Maintenance Shop and to install a Water Purification System. Additional projects awaiting engineer construction approval include:

- (a) Post Theater
- (b) Post Dispensary
- (c) Post Office Facility
- (d) Post Library
- (e) Post NCO Club
- (f) Post EM Club
- (g) Supply Storage Buildings
- (h) Post Recreational Area
- (i) Additional Troop Billets

5. (U) Civic Action: During the past quarter this Battalions civic action program continued to be one of close relationship with the MACV Advisors, Tuy Phouc Sub-Sector. In addition the Battalion has a member on the Qui Nhon Support Command Community Relations Board. The Battalion's representative on the Board participated in the Discussion Committee of "Present and Future Planning" for the City of Qui Nhon.

a. The Battalion Medical section treated 163 general medical patients at the Bn base camp as well as performing Med Caps at Tuy Phouc Sub-Sector. Emergency service for accident victims was also provided at the Bn dispensary. During this period more than \$320.00 worth of medications were expended in the treatment of Vietnamese. The Bn physician also aided in training medical workers at the Tuy Phouc Maternity Clinic.

b. In cooperation with the Tuy Phouc Advisory Team #27, the Bn supplied one vehicle with drivers every day for approximately 45 days to trans-

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port building materials and assist in Vietnamese Self-Help programs. Other vehicles were supplied, on an "on call" basis to aid in refugee relocation.

c. Each month during this period in conjunction with the Friendship Program, commodities were distributed among IF/TF families and members of the Self Defense League. Such items as cloth, pith helmets, candy, soap, cooking oil, powdered milk, tooth brushes and matches were purchased with voluntary funds raised by members of this unit. The Catholic Orphanage near Go Boi also received distribution of the above items. The orphanage raises swine to assist in the support of its sixty (60) orphans. Edible garbage is delivered to the orphanage as a food supplement for the swine. Contributions of food and clothing from church or civic groups in the United States were also delivered by the men of this unit during personal visits to various Vietnamese groups.

6. (U) Personnel:

a. Strength: The 4th Battalion, 60th Artillery, Battery E 41st Artillery and Battery B, 29th Artillery authorized and assigned strengths as of 31 January 1968 are as follows:

	AUTHORIZED				ASSIGNED			
	OFF	WO	EM	AGG	OFF	WO	EM	AGG
4th Battalion, 60th Arty	37	3	658	698	43	2	810	855
Battery E, 41st Arty	2	0	112	114	1	0	145	146
Battery B, (SLT), 29th Arty	7	0	144	151	4	0	152	156
Totals	46	3	914	963	48	2	1107	1157

b. Gains and Losses:

	GAINS				LOSSES			
	OFF	WO	EM	AGG	OFF	WO	EM	AGG
4th Battalion, 60th Arty	11	0	464	475	4	1	64	69
Battery E, 41st Arty	0	0	70	70	0	0	27	27
Battery B, (SLT), 29th Arty	0	0	75	75	0	0	52	32
Totals	11	0	609	620	4	1	323	328

c. Casualties during the reporting period:

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<u>TYPE</u>	<u>NUMBER</u>
Killed in Action	1
Died of Battle Wounds	1
Wounded in Action	19
Missing in Action	0
Non-Battle	0
Total	21

d. Rest and Recuperation:

(1) Out-of-Country

<u>LOCATION</u>	<u>NOV</u>	<u>DEC</u>	<u>JAN</u>
Hawaii	17	10	10
Hong Kong	14	9	7
Manila	2	2	1
Tokyo	6	8	2
Bangkok	14	8	8
Singapore	3	3	1
Taipei	6	7	7
Australia	4	3	7
Penang	2	3	2
Kuala-Lumpur	3	2	1
Totals	71	55	46

(2) In-Country Rest and Recuperation (Vung-Tau)

<u>LOCATION</u>	<u>NOV</u>	<u>DEC</u>	<u>JAN</u>
Vung Tau	2	2	2

e. Morale: The morale of the entire battalion remains excellent.

f. Awards and Decorations: The following Awards and Decorations were presented during the reporting period:

<u>AWARDS</u>	<u>NUMBER</u>
Silver Star	1
Soldier's Medal	2
Bronze Star "V"	2
Bronze Star	5
Army Commendation Medal (V Device)	1
Army Commendation Medal	5
Purple Heart	14

Total 30

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g. Discipline, Law and Order: The following is a listing of judicial and non-judicial actions taken during the reporting period:

ACTION	NUMBER
Article 15	15
Summary Courts Martial	3
Special Courts Martial	0
General Courts Martial	0
Totals	18

h. Religious Activities: During this reporting period, the battalion chaplain conducted 138 worship services for an average of 10.6 services per week; total attendance was 1537. A monthly visit was made to each of the 92 fire units in the field to provide character guidance, personal assistance, and pastoral care. At the base camp, a regular evening devotion and a choir were added to the chapel program. The new post chapel was finished in time for the Christmas services. The Camp townes Chapel facility contains 1000 square feet of floor space.

i. Medical:

(1) During the reporting period the Battalion surgeon made the following visits to the field and administered the inoculations as shown below:

DATES OF VISITS	LOCATION	NUMBER OF INNOCULATIONS
26 Nov-28 Nov 67	Btry A, Ninh Hoa	228 inoculations given
14 Dec 67	Btry C, 4/60th	114 medical records screened
	Bong Song	135 inoculations given
28 Dec 67	Btry A, 4/60	59 shot records screened
	Phan Thict	27 inoculations given
12 Jan 1968	Btry B & D	100 shot records screened
	4/60th Arty Pleiku	28 inoculations given
16 Jan 68	Btry C, 4/60th	97 shot records screened
	Bong Song, RVN	38 inoculations given
17 Jan 68	Btry B, 4/60th	11 shot records screened
	Phu Cat, RVN	1 inoculation given

(2) Malaria Prophylaxis: CP and Dapsone malaria tablets are being taken by this battalion. Out of an average of 744 men present for duty during the reporting period only one (1) case of malaria was found.

(3) Base Camp Operations Included:

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	Nov	Dec	Jan	<u>Aggregate Total</u>
Out-Patient Visits	135	191	213	539
Quartered Patients	4	6	7	17
Hospital Admissions	2	5	5	12
Immunizations	406	411	146	963
Inspections	7	11	4	22

j. Personnel Strength: This battalion is overstrength 193 enlisted men as of the last day of the reporting period. However, these individuals are replacements for 177 enlisted men that have a DEROS during the month of February 1968. The majority of replacements received have had PIOS other than authorized in the battalion; however, these enlisted men have responded extremely well to grasping necessary skills of the basic 13F MOS.

k. Newly attached Unit: On 2 January 1968, Battery B (SLT), 29th Arty was attached to this battalion. All administrative matters which the battery previously forwarded directly to 41st Artillery Group will be processed through the 4th Battalion, 60th Artillery. The battery unit fund was dissolved and consolidated with the Battalion Consolidated Unit Fund. Additionally, R & R quotas, non-judicial and judicial punishment, accident reports, promotions and recommendations for awards will be processed through this headquarters. The Battalion Personnel Section obtained the responsibility to maintain Financial Data Records Folders, personnel records and recurring reports.

l. Personnel Processing: During the period 1 November 1967 through 31 January 1968, the battalion personnel section out-processed 328 individuals returning to CONUS and in-processed 620 replacement personnel.

m. Officer Shortage: In the event the battalion receives no further officer replacements prior to 23 February 1968, a shortage will exist consisting of:

- (1) One (1) Major
- (2) Seven (7) Captains
- (3) Eight (8) Lieutenants
- (4) Three (3) Warrant Officers

This situation was created by a virtually non-existent infusion of officers. Consequently 21 officers and 2 warrant officers will DEROS during the month of February 1968. Replacement officer personnel are arriving; however, unless gains equal losses a critical shortage of officer personnel will exist. The shortage will result in the battalion operating at less than 50% authorized officer strength.

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## SECTION 2 (C) COMMANDER'S OBSERVATIONS AND RECOMMENDATIONS

### Part I, Observations (Lessons Learned)

#### 1. (U) Personnel

Item: Personnel Processing During Large Rotational Humps

Discussion:

a. During the months of December 1967 and January 1968 this battalion in-processed 8 officers and 599 enlisted replacements and out-processed 5 officers and 278 enlisted men.

b. The in/out processing procedures outlined in DA Form 600-8 proved to be most effective and no significant difficulties were encountered. Payment of newly assigned personnel caused some difficulty as most of the replacements had not been paid their regular monthly pay for two to three months.

Observations:

a. Processing of pay is the most time consuming of the inprocessing procedures. Additional clerks should be qualified in pay procedures in order to assist in the preparation of settlement of travel vouchers. Extreme care must be taken while interviewing each individual to insure all pay matters are complete prior to the individual departing base camp for a distant fire base.

b. The opportune time to promote the Army Savings Program is during initial in-processing. Additional pay benefits should be clearly explained along with the various savings programs.

c. The following measures are considered essential when processing large groups:

- (1) Establish sound, practical processing procedures.
- (2) Assign specific tasks for each clerk.
- (3) Use the personnel processing checklist in DA Pam 600-8. Modify the checklist to include special personnel actions required in RVN.
- (4) Upon Completion of all personnel processing, each individual must have a final personnel records check by the personnel NCOIC or Personnel Officer.

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(5) The individual must be available for the final records check. Most of the information needed must be obtained from the individual to check the accuracy of DA Form 41. The individual's CONUS assignment area preference statement is needed for the monthly AOR reporting and the statement of notification of next of kin requires thoroughness in insuring accuracy and proper authentication.

d. Payment to newly assigned personnel is necessary as the majority of replacements have not received monthly pay for 2 months. However, they have received a variety of casual payments, advance payment, etc. Care must be taken to ensure each individual is closely interviewed to avoid overpayments. Processing of pay is the most time consuming of the numerous personnel processing procedures. Additional clerks must be qualified in pay procedures in order to assist in the preparation of settlement of travel vouchers. The Army Savings Program is best presented at this time. Additionally, the extra pay entitlements for Vietnam service can be explained as well as different ways personnel may be paid can be discussed with the individual. This will prevent pay complaints when the individual has joined his unit in the field. Every individual must be carefully queried and care must be taken so as not to allow anyone to depart the personnel section with an incomplete pay action. Pay discrepancies which involve support of dependents should be settled prior to the departure from base camp. A thorough briefing of each individual on pay matters will result in dividends in the form of fewer pay complaints.

## 2. (C) Operations

a. Item: Distance between vehicles in convoys and convoy escort by automatic weapons.

Discussion: Varying the distance between vehicles in convoy prevents enemy from predetermining set intervals for emplacement of mines in ambush preparation. The irregularity in vehicle interval aids in destroying the enemy timing during a coordinated command detonated mine and ground attack/ambush.

Observation: Varying the distance between vehicles in convoys interrupts and destroys the enemy timing required for planned ambush against two or more vehicles in convoy.

b. Item: Preparation of M55 Quad .50 for Road Operations

Discussion: Prior to conducting road operations, the floor of the drivers compartment and cargo bed of the prime mover (2½ ton 6x6 truck) should be completely sandbagged and the windshield and side windows down. An M55 prepared in this manner was hit by an enemy emplaced land mine in the Bon Block area, resulting in the front end of the truck being demolished. There were no injuries to personnel in the drivers compartment. However, all window and windshield glass was broken and the floor board heavily damaged.

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by fragments. Had the windshield and side windows been up, and the floorboards not been completely sandbagged, personnel could have sustained serious injuries.

Observation: Complete sandbagging of the floorboard, and cargo compartments of the M55 Quad .50 Cal prime mover and the windshield and side windows down, will lessen the injury rate of personnel involved in mining incidents.

c. Item: Fuel Consumption of the M42 Duster

Discussion: The normal fuel consumption of the M42 Duster is 100 miles to a tank of gas, or approximately 0.7 miles per gallon. Experience, thus far, in the Republic of Vietnam has shown that when operating in deep sand, marshy areas, and rice paddies the fuel consumption is approximately doubled. Considering this, reconnaissance must be made to determine the type terrain in which the Dusters will be operating and arrangements made for timely POL resupply.

Observation: The M42 Duster's fuel consumption is approximately doubled when operating in sand, marshy areas and rice paddies.

d. Item: Common cause of weapons malfunction of the twin 40MM Gun

Discussion: A common cause of malfunctions on the twin 40MM Gun is jamming caused by ammunition clips. The clip that is primarily responsible for the jamming is the square end Navy clip. The number of jams caused by clips can be reduced considerably if clips with round ends are salvaged and used to reload ammunition shipped with the square clips. Malfunctions have also been reduced by loading the initial rounds singularly, instead of by clips, ensuring continuous firing for the first 14 rounds.

Observation: Malfunctions have been reduced during fire missions when round end ammunition clips are utilized. Additionally, loading the initial rounds singularly has assured uninterrupted firing for the first 14 rounds.

e. Item: Coordination and Target Identification in the Ground Attack.

Discussion: The use of the C.V.C. helmets and radio headsets by M42 crew members makes it virtually impossible to hear small arms fire and detect the direction from which it is coming. The first indication of small arm fire is usually when the troops on the ground take up firing positions. Coordination with the infantry explaining this limitation of the M42 has produced a very simple but effective system of target identification by the infantry. The infantry raise their rifles overhead, barrel pointing toward the enemy position, alerting the M42 crew to identify and engage the target.

Observation: When contact has been made with the enemy, the M42 cannot deliver its full potential until the target is identified. The infantry can assist in identifying enemy firing positions to the M42 crew by

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raising their rifle overhead with the muzzle pointed toward the target.

f. Item: Traversing rice paddies with the M42 twin 40MM Gun

Discussion: When following properly executed simple rules, the M42 Duster can negotiate wet or dry rice paddies without difficulty. Whether wet or dry, rice paddies normally have a thick crust on the bottom. If the crust breaks, the M42 will either sink or become stuck. Prior to crossing, a point should be picked on the far side that will allow easy exit from the paddy. The M42 should proceed slowly, and gradually increasing speed to 5 mph and under no circumstances stop until solid ground is reached. Slight turns, if executed slowly, are possible, but should be avoided if possible.

Observation: The M42 Duster is capable of crossing wet or dry rice paddies if crossed at approximately 5 mph along a straight line to a predetermined exit point.

g. Item: Use of Ground Guides for the M42, twin 40MM Gun

Discussion: Ground guides are necessary when maneuvering Dusters over narrow bridges. Numerous narrow bridges are encountered throughout the Republic of Vietnam. A misjudgement on the part of the driver can cause serious accidents resulting in injury to personnel and damage to equipment. Regardless of the driving ability of the M42 driver, the advantage of using a ground guide should not be overlooked.

Observation: The use of ground guides, even in combat, can be a time and life saving procedure.

h. Item: M42 Supporting Fires

Discussion: The M42 Twin 40MM Gun has the capability of firing one gun single fire, both guns single fire, one gun automatic, or both guns automatic. Experience in the Republic of Vietnam has proven that in most tactical situations, firing one gun single fire provides effective and continuous fire support. The remaining gun is loaded and ready for action should the firing gun malfunction. This unit had the unfortunate experience of both guns jamming at the same time during a combat assault; fortunately the support Duster was able to immediately assume the mission.

Observation: The tactical situation permitting, employing a single 40MM gun, single fire, provides effective supporting fires, in most circumstances, with a decrease in overall ammunition expenditure, while ensuring continuous fire support is available to the supported unit.

i. Item: M42 "Duster" Primary Weapon Deadspace

Discussion: Extending from the M42 Duster for approximately 20 meters in all directions is an area in which the primary weapon, 40MM Gun cannot effectively engage ground targets due to the depression limits of the weapons system. To countersapper attacks on the M42 during enemy ambushes

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the crew neutralizes this area by using fragmentation grenades. This can be effectively accomplished without danger to crew members, equipment or effectiveness of other target engagement.

Observation: The areas immediately surrounding the M42 Duster can be effectively neutralized by the use of fragmentation grenades.

J. Item: Firing counterfire missions into Artillery No Fire Zones with the M42 Duster.

DISCUSSION: On two occasions enemy recoilless rifles positioned in Artillery No Fire Zones have fired upon landing zones protected by M42's. On both occasions M42 squads have fired counterfire missions and silenced the recoilless rifles without any reported injury to friendly civilians within the area. On 15 January 1968, C112 fired a counterfire mission against a recoilless rifle firing from an Artillery No Fire Zone into LZ Two Bits. An infantry sweep of the target area on 16 January 1968 revealed three (3) dead NVA soldiers, one 57 Recoilless Rifle, 27 rounds of 57MM Recoilless Rifle ammunition. There were no civilians injured. Often the M42 Dusters are refused permission to fire counterfire missions into Artillery No Fire Zones. The accuracy of the M42, 40MM Gun, firing single fire, combined with the 15 foot bursting radius of the 40MM round makes the M42 an ideal weapon to silence enemy direct fire weapons firing from populated areas.

Observation: The M42, 40MM Gun, firing single fire, is an effective and accurate weapon for neutralizing enemy activity in populated area. The use of the gunners quadrant in laying for elevation and the azimuth indicator for direction affords the 40MM Gun pinpoint accuracy.

k. Item: Equipment on rear deck of M42 Duster.

Discussion: During Search and Destroy operation and movement from a Landing Zone into the area of operations, the infantry will ride on the rear deck of the M42 as much and as far as possible. On one such occasion a Duster Commander permitted the infantry, along with their packs, and gear to ride on the rear deck while travelling to an area of operation. After travelling approximately two miles, one of the infantry packs, after being placed on the rear deck, overheated and caught fire due to the intense heat created by the engine. The pack contained Composition "A" explosive, claymore mines, LAW's, hand grenades and small arms ammunition. No one was injured, however, personnel were pinned for approximately thirty minutes by the exploding small arms ammunition, LAW's and Composition "A".

Observation: Any advantage gained by carrying equipment on the rear deck of the M42 is nullified by the danger of fires and the possible damage to the engine caused by overheating.

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1. Item: M42 Combat Assault Formation

Discussion: Success had been achieved on combat assault and infantry close support missions by employing one Duster as an assault weapon with a second Duster in support. The support track should be located forty meters to the right and twenty meters at the rear of the primary assault track. The commander can then control the fires and movement of the support track by arm and hand signals from his position in the assault track. Should the assault track fall victim to enemy action, expend all ready ammunition or a weapon malfunction occur, the support track continues the assault.

Observation: Employing two (2) M42 Duster on combat assault missions in the echelon right formation facilitates command, control, and ensures continuous fire support for the assaulting force.

m. Item: Employment of the M42 Duster and Xenon Searchlight combination.

Discussion: Targets detected by the Xenon Searchlight, in the infra-red mode, can be effectively fired upon by the M42 Duster if the Duster and Searchlight are positioned in close proximity to each other and on unobserved targets and laid reciprocally for direction. Firing without visible light requires computation of firing data for the Duster; however, if visible light is used, direct fire techniques are employed to engage the target. The AN/MSS-3 provides the Duster with direction and range which is compared with the range card for safety before engaging. Attacking targets, without visible light, by computed firing data provides for complete surprise. After impact of the initial rounds visible light is used to continue the mission.

Observation: Employment of the M42 Duster and the Xenon searchlight combination is a potent and highly desirable close-in perimeter defense team.

n. Item: Component Failure of the Xenon Searchlight AN/MSS-3

Discussion: A test was conducted by Battery B (post), 29th Artillery to determine reasons for an excessive number of converter and igniter failures in the AN/MSS-3 searchlight. The test was based on the assumption that converter and igniter failure was due primarily to sudden and frequent surges caused by light ignition. Operators of the test group searchlights were instructed not to turn the light power switch off after each mission unless a scheduled or anticipated delay of twenty minutes or more existed before the next mission. Further, there was no restrictions on the mission length. This procedure greatly reduced the number of times the searchlight power was turned on and it has been determined that such utilization has resulted in fewer failures to converters and igniters.

Observation: Converter and igniter failures are due to power surges caused when the searchlight power switch is turned on. The searchlight power switch should be turned off only when there will be an actual or anticipated delay between missions in excess of 20 minutes

Footnote 3: (See Incl 9)

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3. (C) Training and Organization

a. Item: Procedures for computing Minimum Quadrant Elevation for the self-propelled Twin 40MM Gun, M42.

Discussion: A procedure for computing minimum quadrant elevation for the self-propelled twin 40MM gun, M42 was developed by this headquarters and submitted as part of the Operational Report Lessons Learned for Quarterly Period Ending 31 October 1967 (RCS-CSFOR-65) (UIC-WFUZAA) (U). The method was approved by Headquarters, I Field Forces Artillery and adopted as standard procedure on 31 October 1967 in this battalion. To continually assure timely, accurate and safe fires, these procedures were kept constantly under review and new methods considered.

Observation: The procedures outlined for use in tank gunnery were explored as they are based upon high muzzle velocity and flat trajectory similar to the 40MM gun. The procedures outlined in FM 17-12 have been modified for possible use with the 40MM, M42 and are explained at Inclosure 10. A comparison of the current method of computing minimum quadrant and the proposed method shows that the proposed method does not contain irregularities as noted in the current method.<sup>4</sup> The modified minimum quadrant elevation procedures, for use with the M42, are simple, accurate and provide the troop safety clearance required by current Army Regulations and local directives.

b. Item: Waterborne M42 (Duster) Operations

Discussion:

(1) Stability of the LCM as a firing platform: There are numerous coastal areas in the Republic of Vietnam not accessible to the twin 40MM gun, M42 for firing or maneuver. A mode of transportation not organic to the battalion was required to travel to these areas not accessible by land route. It was noted that a Landing Craft, Mechanized-8 (LCM) had the weight capacity to transport the M42 and could operate in water as shallow as five (5) feet. A second question, whether the LCM would be stable enough for the M42 to deliver accurate fires, remained unanswered. On 8 January 1968 an M42 was loaded aboard an LCM from the 1098th Transportation Company, Medium Boat), 159th Transportation Battalion. The area of operation was in the Baie de Qui Nhon (Map Sheet number 6836 I, Hai Dong, Vietnam and number 6836 IV (Qui Nhon, Vietnam). It was found that the LCM/M42 could travel as far north as Grid line 290 and as far east as Grid line 134 bringing fires on the land mass to the north and east. The stability of the LCM at the limit was sufficient for the M42 to provide accurate pinpoint or area fires. During movement, the LCM provided the same stability; however, the gunnery problem for the M42 was reversed from the Air Defense gunnery problem. The firing platform was moving instead of the target. Again accurate fires could be brought against the target. On 11 January 1968, the LCM/M42 was taken to the vicinity of Grid CR 100150 in the South China Sea (Map Sheet number

Footnote: 4 (See Incl 10)

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6836 H.H., Van Canh, Vietnam) to test the stability of the LCM on the open sea. The sea was considered calm by the crew, however, the pitch and roll of the LCM was too great for the M42 to provide accurate fires of any type.

(2) Observation: An observer aboard the LCM can direct fires along the shoreline with no difficulty. However, he is limited in observing inland targets either on a land mass or in mangrove areas along the shore. For inland and mangrove targets, an aerial observer can adjust the M42 fires. Aerial adjustment was accomplished by an aerial observer in an O1-E aircraft provided by the MACV Advisory Team #27, Tuy Phuoc district, on 8 January 1968. For close observation of the shoreline and under the mangroves, a Boston Whaler speedboat with an Artillery observer aboard was provided by the United States Navy at Qui Nhon on 9 January 1968. Shoreline observation was improved from the LCM observer due to the close proximity of observer and target.

(3) Navigation: Navigation of the LCM is dependent upon the experience of the LCM crew, charts on board and mechanical condition. Without charts, the crew is unable to chart a course into the deepest waters of marginal areas. The coxswain should be experienced in channeling the boat in marginal areas, channeling being no more than the LCM making it's own channel. The LCM must be in good mechanical condition with all four (4) engines operating, otherwise, the channeling capability is reduced approximately seventy five percent.

(4) Landing and retracting of the M42 on a beachhead: On 22 January 1968, a beach landing was attempted by an M42 from an LCM at Grid CR 152356. The M42 must be backed into the LCM so that it can drive off the LCM upon landing. The landing was successful with the M42 negotiating approximately three (3) feet of surf. Upon retracting the M42 onto the LCM, the M42 can reload with minimum difficulty and guidance. Second, it is difficult to position an individual to guide the M42 on to the LCM backwards. And lastly, the surf will break against the M42 creating a heavy overwash and flooding out the engine. The landing beach should have a minimum depth of two (2) fathoms, not more than 100 meters from the beach at mean tide.

Observation:

(1) The Landing Craft, Mechanized-8 is a stable firing platform for the twin 40MM gun, M42, in protected coastal waters, bays and rivers with a minimum depth of five (5) feet. The LCM can not be used as a firing platform in the open sea. Whether the LCM is stationary or moving in protected waters, the M42 can deliver accurate fires in areas not accessible by land routes.

(2) Target observation can be provided by an observer on the LCM (M42 squad leader), aerial observer or a forward observer in a shallow draft speed boat.

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(3) The LCM crew must have navigation charts available, they must be able to chart a course and the coxswain must know how to channel his craft through marginal water depth areas. Otherwise, the LCM can be grounded thus reducing its positioning capabilities or run on possible reefs or rocks formations underwater causing either serious damage to the craft or possibly sinking the craft. The hull must be in good mechanical condition otherwise it will not be able to channel itself through marginal water depths or retract.

(4) The LCM can land a M42 on beachheads along the coastline of the Republic of Vietnam providing fire and maneuver support in areas not accessible by land route.<sup>5</sup>

4. (U) NONE

5. (C) Logistics

Item: Relocation of major items of equipment by water transportation.

Discussion: In November of 1967, it was necessary to transport a replacement M42 Duster from Qui Nhon to Phan Thiet to replace a deadlined Duster at that location. On 23 November the replacement Duster was driven to LST Beach, Qui Nhon for shipment. Two days later further liaison was made with Cam Ranh Bay to check on the arrival time of the replacement Duster and expedite further movement to Phan Thiet. At that time transportation officials at Cam Ranh Bay stated that a tug would be sent to Qui Nhon to pick up the replacement Duster in approximately three (3) days. On 29 November records in the Office of the Director of Transportation (Qui Nhon) reflected that the replacement Duster had been shipped from Qui Nhon, Priority One on 24 November. A further check by unit personnel revealed that the barge with the replacement Duster was still in the Qui Nhon harbor awaiting a tug which was scheduled to arrive and depart on 30 November or 1 December. Again, contact was made with the Transportation operations CIC at Cam Ranh Bay who insisted the barge would be given top priority upon its arrival at Cam Ranh Bay. On 18 December Transportation officials were contacted at Phan Thiet and at that time the replacement Duster had not arrived. The replacement Duster finally arrived at Phan Thiet on 19 December 1967. The movement of this combat essential piece of equipment from Qui Nhon to Phan Thiet, a distance of approximately 275 miles required 26 days.

Observation: Transportation personnel at Qui Nhon discouraged this unit from sending escort personnel with the replacement Duster. However, an escort could have informed the unit as to the location and movement status of the Duster, performed required maintenance and prevented tampering with equipment and tools.

6. (C) Other

Item: Azimuth Indicator for Quad .50 Cal Machine Gun, 1155

Footnote: 5 (See Incl 5)

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Discussion: Employment of the Quad .50 Cal Machine Gun, M55 thus far in the Republic of Vietnam has proven that more accurate and effective control of fire could be achieved with an azimuth indicator installed on the M55 mount. This would allow the M55 to bring a heavy volume of surprise fires on targets detected by searchlights in the same manner as described for the M42. Additionally, this would facilitate firing unobserved area missions using firing table (FT 504A-T-2). A test model of an azimuth indicator was constructed and tested by Battery E, 41st Artillery. The indicator was found to be fully capable of providing accurate direction for area fire missions. A sketch of the fabricated azimuth indicator is attached at Inclosure 11.

Observation: The effectiveness of the M55 Quad .50 Cal Machine Gun would be greatly enhanced by the adoption of an azimuth indicator. The M55 Quad .50 Cal Machine Gun can bring a heavy volume of surprise fires on confirmed area targets with the added ability to fire at designated ranges and azimuths.

#### Part II. Recommendations

##### 1. (C) Personnel:

a. Reference Part 1, Observations (Lessons Learned) Personnel.

b. The following actions are recommended:

(1) NONE

##### 2. (C) Operations

(a) Reference Part 1, Observations (Lessons Learned) Operations.

(b) The following action are recommended:

(1) Irregular intervals between convoy vehicle and convoy escort automatic weapons should become standard Operating Procedures.

(2) Prior to road operations with the M55 Quad .50, the floorboard and cargo compartment should be completely sandbagged and the windshield and side windows placed in the down position.

(3) During the planning phase of a maneuver operation an aerial or map reconnaissance should be made to determine the type terrain and the routes the Dusters will utilize and appropriate arrangements made for PUN resupply.

(4) The round end ammunition clips be utilized as much as possible to include reloading after firing. The initial 14 rounds be loaded into the automatic loader singularly.

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(5) When infantry troops start receiving enemy fire, they should raise their rifles overhead with barrels pointed in the direction of the target to identify the target.

(6) Prior to attempting a rice paddy crossing, a point should be designated on the far side to serve as an exit. The Duster should proceed slowly, gradually increasing speed to 5 mph ensuring travel is made in a straight line to the exit.

(7) Ground guides for the M42 Duster, should be used when the bridge condition, width, and maneuverability is unknown.

(8) The M42 Duster conduct fire missions by single fire in order to provide effective supporting fires for extended perios.

(9) Each M42 Duster crew should have on hand, in the turret, sufficient fragmentation grenades to employ in neutralizing the primary weapon deadspace during close enemy contact.

(10) The M42, 40MM gun, be utilized to engage enemy direct fire weapons firing from populated areas and artillery No Fire Zones.

(11) During Search and Destroy operations and movement from Landing Zones into areas of operation, the infantry troops will not be permitted to place their packs and associated gear on the rear deck of the M42 Duster.

(12) A minimum of two (2) Dusters be employed on combat assault and infantry close support missions. One Duster be employed as assault or lead track and the second Duster employed as support track.

(13) When Dusters and Searchlight are employed on perimeter defense, they should be employed as a team. The Dusters and searchlight should be layed reciprocally to provide effective fire and achieve maximum utilization of both systems.

(14) That further testing be conducted to determine exact causes for converter and igniter failure and necessary corrective action to include required changes in doctrine on employment.

3. (C) Training and Organization

a. Reference part 1, Observation (Lessons Learned) Training and Organization.

b. The following actions are recommended:

(1) The herein proposed method for determining the minimum quadrant elevation for the M42 replace procedures currently in use.

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AVGK-AF-S3

31 January 1968

SUBJECT: Operational Report for Quarterly Period Ending 31 January 1968  
(RDS-CSPFOR-65) (UIC-WFUZMA) (U)

(2) Information concerning the capabilities and characteristics of the M42/LCM combination should be disseminated to all USAHV commands for consideration when planning future operations.

4. (U) Intelligence: NONE

5. (C) Logistics

a. Reference Part 1, Observation (Lessons Learned) Logistics.

b. The following actions are recommended.

Early notification and coordination with area transportation personnel on planned movement of major items of equipment by water is essential. Frequent and continuous follow-up action must be taken to insure that combat essential equipment is transported with a minimum of delay. If at all possible, at least one man should accompany the equipment to expedite movement and perform preventive maintenance.

6. (C) Others

a. Reference Part 1, Observations (Lessons Learned) Others.

b. The following actions are recommended.

Azimuth indicators be fabricated, adopted and applied as an MWO to the M55 Quad .50 Cal mount.

11 Incl

as

Incl 1, 2 & 8 withdrawn, Hqs, Commanding

DA

W.J. McMANAM

LTC, Artillery

DISTRIBUTION:

SPECIAL

2- CINCUSAFMC

3- HQ, USAHV

5- CO, 41st Arty Gp

**CONFIDENTIAL**

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AVGK-CO (31 JAN 68)

1st Ind

SUBJECT: Operational Report for Quarterly Period Ending 31 January  
1968, (RCS-CSFOR-65) (UIC-WUM) (U)

HEADQUARTERS, 41ST ARTILLERY GROUP, APO 96368, 27 February 1968

TO: Commanding General, I Field Force Vietnam Artillery, APO 96350

1. (U) The attached Operational Report from the 4th Battalion,  
60th Artillery is approved and forwarded.
2. (U) Regraded unclassified when separated from classified documents.

FOR THE COMMANDER:

*Robert D. Rowan*

ROBERT D. ROWAN  
1LT, SigC  
Asst, Adjutant

*30*  
AVFA-AT-D (31 Jan 68) 2d Ind

SUBJECT: Operational Report for Quarterly Period Ending  
31 January 1968, (RCS-CSFOR-65) (UIC-WUZAA) (4th  
Bn, 60th Arty) (U)

Headquarters, I Field Force Vietnam Artillery, APO 96350,  
19 March 1968

THRU: Commanding General, I Field Force Vietnam, ATTN: AVFA-GC-OT,  
APO 96350

TO: Department of the Army, Assistant Chief of Staff for Force  
Development, Washington, D. C. 20310

1. Concur with observations and recommendations contained in basic communication and preceding indorsement.
2. Reference is made to paragraph 6m, Section 1, page 14. This problem has been alleviated by receipt of sufficient replacements.
3. Reference is made to paragraphs 2b (1) through 2b (10), 2b (12) and 2b (13), Section 2, Part II, page 24. These recommendations are extensions of the lessons learned contained in Section 2, Part I. No Command action is necessary concerning these recommendations. However, recommend lessons learned be furnished other automatic weapons battalions for information.
4. Reference is made to paragraph 2b (11), Section 2, Part II, page 25. Concur. This safety procedure will be made a matter of command interest and policy.
5. Reference is made to paragraph 2b (14), Section 2, Part II, page 25. Results of staff study at inclosure 9 appear valid and indicate technical research is required to develop improved converter and igniter for the AN/MSS-3 Searchlight. In the interim, procedure developed by the unit will decrease down time.
6. Reference is made to paragraph 3b (1), Section 2, Part II, page 25. The procedure used by the battalion for determining minimum quadrant elevation is based on exhaustive research as may be noted at inclosure 10 and appears valid. 4th Battalion, 60th Artillery has been advised to continue use of the developed system. Copies of procedures will be forwarded through command channels by separate action to the U.S. Army Air Defense Center for evaluation and possible inclusion in system publications. Information copies will be forwarded to 5th Battalion, 2d Artillery and 1st Battalion, 44th Artillery.

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AVFA-AT-D

SUBJECT: Operational Report for Quarterly Period Ending  
31 January 1968, (RCS-CSFOR-65) (UIC-WUZAA) (4th  
Bn, 60th Arty) (U)

7. Reference is made to paragraph 3b (2), Section 2, Part II, Page 26. Procedures developed for employment of M42 weapons system from an LCM as explained at inclosure 5 will be described in the I FFORCEV Artillery Newsletter.

8. Reference is made to paragraph 5b, Section 2, Part II, Page 26. Unit did not submit request to G4 Transportation, I Field Force Vietnam as is the established procedure in accordance with paragraph 5a (1), I FFORCEV Reg 55-2. Unit has been advised of the proper procedure to obtain transportation for combat essential moves.

9. Reference is made to paragraph 6b, Section 2, Part II, Page 26. Commanding Officer, 4th Battalion, 60th Artillery will be advised to submit an EIR on DA Form 2407 concerning this recommendation.

FOR THE COMMANDER:



DONALD L. BURTON  
Major, Artillery  
Adjutant

*29*

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AVFA-GC-OT (31 Jan 68) 3d Ind

SUBJECT: Operational Report-Lessons Learned for Quarterly Period Ending  
31 January 1968 RCS CSFOR-65 UIC WUZAA 4th Bn, 60th Arty (U)

Headquarters, I Field Force Vietnam, APO 96350 3 APR 1968

TO: Commanding General, United States Army Vietnam, ATTN: AVHGC-DST,  
APO 96375

Concur.

FOR THE COMMANDER:

*Charles J. Rawlins*  
CHARLES J. RAWLINS  
LT, AGC  
ASST ADJUTANT GENERAL

*33*

AVHCC-DST (31 Jan 68) 4th Ind (U) CPT Arnold/raf/LBN A485  
SUBJECT: Operational Report for Quarterly Period Ending 31 January 1968,  
(RCS-CSFOR-65) (UIC-WFUZAA) (U)

HEADQUARTERS, US ARMY VIETNAM, APO San Francisco 96375 7 APR 1968

TO: Commander in Chief, United States Army, Pacific, ATTN: GRUP-DT,  
APO 96558

1. This headquarters has reviewed the Operational Report-Lessons Learned for the quarterly period ending 31 January 1968 from Headquarters, 4th Battalion, 60th Artillery as indorsed.
2. Concur with report as indorsed. Report is considered adequate.
3. A copy of this endorsement will be furnished to the reporting unit through channels.

FOR THE COMMANDER:

*C. S. Nakatsukasa*  
C. S. NAKATSUKASA  
Captain, AGC  
Assistant Adjutant Gen

Copy furnished:  
HQ, I FFORCEV  
HQ, 4th Bn, 60th Arty

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GPOP-DT (31 Jan 68) 5th Ind (U)

SUBJECT: Operational Report of HQ, 4th Bn, 60th Artillery,  
for Period Ending 31 January 1968, RCS CSFOR-65 (R1)

HQ, US Army, Pacific, APO San Francisco 96558

TO: Assistant Chief of Staff for Force Development,  
Department of the Army, Washington, D.C. 20310

This headquarters has evaluated subject report and forwarding  
indorsements and concurs in the report as indorsed.

FOR THE COMMANDER IN CHIEF:

*Cashout*

*E.L. SNORTH  
CPT, AGC  
Asst AG*

*35.*  
DEPARTMENT OF THE ARMY  
HEADQUARTERS, 4TH BATTALION, 60TH ARTILLERY  
APO 96238

AVGK-AF-CO

19 JANUARY 1968

SUBJECT: Automatic Weapons and Searchlight Employment

TO: SEE DISTRIBUTION

1. To assist supported unit commanders in the employment of automatic weapons and searchlights placed under their operational control, the inclosure hereto has been prepared as a ready reference of significant data, both of a general as well as specialized nature. This data is a summarization of both published doctrine and experience gained over the past eleven months in Vietnam. No Air Defense Mission is anticipated in the near future; however, should the need arise, fire units of this battalion stand ready to meet their Air Defense responsibilities. Automatic Weapons crews conduct regular training to assure this mission capability.

2. The M42 "Duster" has proven itself extremely reliable in the ground support role. The versatility of this weapon has been demonstrated on perimeter defense, convoy escort, work party security, search and destroy, and strong point security missions. To exploit the maximum capability of the M42 on perimeter defense, alternate firing points should be designated to counter threats to any sector of the perimeter. The fact that the M42 is an outstanding perimeter defense weapon should not overshadow the offensive potential of this weapon system. Infantry commanders, who have utilized the M42's full capabilities of maneuverability and fire power on search and destroy missions have discovered that it is an outstanding weapons system for neutralizing ambushes and strong points. Positions should be selected to take advantage of the full traverse capabilities of the M42. The flat trajectory and supersensitive fuze must always be considered when positioning the M42. Supplementary positions should be selected to capitalize on the Dusters' mobility.

3. The M55 "QUAD FIFTY" is capable of performing convoy escort, work party security, strong point security, and perimeter defense missions. The M55 is normally mounted on the bed of a 2½ ton truck prime mover; however, it can be air-transported by CH-47 helicopter. The M55 is an area weapon and caution must be exercised in positioning to ensure that the fields of fire are marked by limiting stakes and cleared of all friendly personnel.

4. The Automatic Weapons Commander must coordinate the mission, position, fire control, rules of engagement, restriction on firing communications, fields of fire, supplementary positioning and determine who will supply ammunition, rations, field fortifications materials and POC with the supported commander. Upon occupation of a position the crew must immediately lay the weapon for direction, emplace limiting stakes, perform required maintenance,

*Incl 3*

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AVGK-AF-CO

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19 January 1968

SUBJECT: Automatic Weapons and Searchlight Employment

make required checks and adjustments, prepare range cards, compute minimum quadrant elevation (M42 only), construct field fortifications, and continue position improvement.

5. The AN/MSS-3 Searchlight replaces, on a two for one basis, the carbon-arc searchlight previously employed. The AN/MSS-3 does not have the visible light range or candle power of the carbon-arc; however, it is more mobile as it is mounted on a standard M151A1 model, 1/2 ton vehicle. The light, mounted on the rear of the jeep, can traverse 6400 mils and elevate plus 540 mils or minus 380 mils from the level of the parked vehicle. It can project 120 million candle power of visible light and can also produce infrared light which is invisible to the naked eye. A general rule for selecting searchlight positions is to locate them on high ground without mask. The light may be utilized for any number of missions. Most frequent utilization of the searchlight in Vietnam may be classified generally as perimeter defense illumination, direct support of ground operations, illumination to acquire enemy targets, and defensive illumination for deterrence. When the searchlight crew reports to a new position they immediately make liaison with the supported unit commander to determine the mission and advise the commander on the most effective utilization of the light. The infrared capability can be particularly valuable when used in conjunction with the M42 Dusters, Quad .50's, and/or antipersonnel radar. Target detection by radar, identification by infrared, illumination by visible light and destruction by dusters is a potent team and a strong deterrent against future attacks.

6. The assistance rendered to personnel of this battalion by all supported units has been of significant value in the overall mission accomplishment. The continued interest, particularly with regard to maximum utilization of all weapon systems capabilities, is solicited. Additionally, I encourage you to call upon me, my staff, and commanders should you desire to discuss problem areas or proposed employment.

  
W.J. MONAHAN  
LTC, Artillery  
Commanding

1 Incl  
as

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31

## AUTOMATIC WEAPONS AND SEARCHLIGHT EMPLOYMENT

1. The 4th Battalion, (AW)(SP), 60th Artillery will complete one year of service in Vietnam on 11 March 1968. A synopsis of lessons learned from experience in operations during this period of time are summarized below to assist in planning and the further employment of the twin 40MM M42, Quad Caliber .50 Machine Gun M55, and Xenon Searchlight AN/MSS-3.

a. Employment has been characterized by wide dispersal and a multiplicity of missions which has continually challenged the imagination and initiative of the officers and non-commissioned officers of this battalion. Presently units of this battalion are deployed in support of the 1st Cavalry Division (Air Mobile), 4th Infantry Division, 101st Airborne Division, 173rd Airborne Brigade, 41st Artillery Group, 52nd Artillery Group, Tuy Hoa Sub-area Command, the Qui Nhon Sub-area Command and Task Force, 2nd Battalion, 7th Cavalry.

b. The 4th Battalion, (AW)(SP), 60th Artillery with its organic twin 40MM Gun M42's and attached Quad Caliber .50 Machine Gun M55's and Xenon Searchlight AN/MSS-3's, has been employed only in the ground support role.

2. The employment of automatic weapons and searchlights has proven extremely effective not only in open engagement of the enemy but also as a deterrent against enemy attacks. Improper employment of automatic weapons has created some serious maintenance problems. Extended driving of the M42 at low speed through difficult terrain and on convoy escort missions causes excessive wear on the engine, transmission, and suspension parts. The M55 is not capable of cross country operations; however, the weapon can be removed from its prime mover and air transported by CH-47 helicopter for employment at distant and remote areas.

a. Suitable missions for AW:

(1) Tactical missions.

- (a) Road Security
- (b) Perimeter defense
- (c) Search and destroy
- (d) Work party security
- (e) Strong point security

(f) Convoy escort. The M55 should be utilized for convoy escort whenever feasible, due to the equipment age and maintenance requirement of the M42.

(g) Air transportable (M55)

Incl 1 to Incl 3

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(h) Riverine (M55 & M42)

(2) Fire Mission.

(a) Interdiction- Areas or points which the enemy is likely to use at some unpredicted time. Fire is delivered to deny the enemy unrestricted use of an area or point. This includes blocking fires.

(b) Counterfire- Known or suspected crew served weapons locations fired upon during, or immediately after, enemy rocket, mortar, or recoilless rifle attack.

(c) Reconnaissance by fire- Fire placed on a suspected enemy position to cause the enemy to disclose his presence by movement or return of fire.

(d) Confirmed target- Enemy location is known and his presence has been determined by contact with friendly forces, activity verified by observation, or positive ground surveillance radars.

(e) Others:

1 Destruction

2 Training

3 Demonstration

4 Preparation

b. Missions considered unsuitable for automatic weapons

(1) Cavalry operations, such as screening and reconnaissance missions.

(2) Cross country movement in jungle terrain.

3. Considerations for choice between the M42 and the M55.

a. The M42 is preferred for:

(1) Point targets

(2) Close in fires at heavier targets

b. The M55 is preferred when:

(1) Firing near friendly troops in underbrush or heavy foliage.

(2) A heavy volume of close fire is required.

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4. Maintenance operations for automatic weapons.

a. In order that their weapons systems remain highly versatile and in a combat ready status, commanders must ensure adequate maintenance time and an intensive maintenance program.

b. Replacement parts for Automatic Weapons are arriving in Vietnam in quantities which are presently considered marginally adequate. Under the present OPCON program it is recommended that direct support maintenance battalions of supported units provide common items maintenance support. This is a critical factor in AW down time and would greatly enhance the battalion's combat readiness posture. The AW Battalion has a limited vehicle recovery capability and will require assistance from the supported unit.

5. The employment of searchlights in conjunction with automatic weapons has proven particularly effective. With the azimuth indicator of the searchlight and M42 laid parallel, a target can be engaged without the gun crew actually observing the target. Effectiveness can be increased by searching in the infrared mode and employing white light and automatic weapons fire simultaneously.

6. M42's should be employed in pairs to provide mutual fire support, limited vehicle recovery capability, and to maintain section integrity.

7. M42 Characteristics and Capabilities:

a. Mobility. The 40MM Gun motor carriage M42 has two 40MM automatic guns mounted coaxially on a full-tracked armored vehicle. It has the following characteristics:

(1) Weight (with crew and equipment)	49,5000lbs
(2) Allowable speed	45mph
(3) Cruising range, average (20% less during operations in RVN)	100mi.
(4) Maximum grade ability	60%
(5) Length	249.7in
(6) Width	126.9in
(7) Ground pressure	9.3psi
(8) Height	112.6in
(9) Maximum fording depth	40in
(10) Fuel consumption	0.7mpg

(11) Maximum vertical obstacle	2.35ft
(12) Maximum width of ditch	6.0ft

b. Weapon Characteristics: The M42 automatic weapon may be fired either fully automatic or semi-automatic. Maximum rate of fire is 120 rds per minute per barrel. The weapon is air-cooled and if fired continuously at the maximum rate, must be allowed to cool after 60 rounds per barrel. Since the tube life of a 40MM Gun is decreased by a fast rate of fire and over-heating, targets will be engaged with a rate of fire not to exceed 60 rounds per minute per barrel. Other characteristics are:

(1) Maximum effective range	1650M (air defense) 3200-4500M (direct fire)
(2) Traverse limits	6400°
(3) Elevation limits	
(a) Power	-3° to +85°
(b) Manual	-5° to +87°
(4) Azimuth slow rate maximum	40°/sec
(5) Elevation slew rate maximum	25°/sec
(6) Amount of traverse per turn	10.3°
(7) Amount of elevation per turn	4°
(8) Estimated accuracy life of tube	12,000 rds

c. Ammunition. The M42 automatic weapon uses a high explosive tracer shell, destroying (HE-T-SD) projectile. The point detonating fuze is supersensitive and detonation will result if the projectile strikes a branch, overhead wires or other resistant objects regardless of range. If no contact is made, the tracer element will burn out between 3,400 and 4,500 meters, depending on the tracer burn out rate.

d. Selection of position. Position should be selected to take advantage of the unlimited traverse capabilities of the M42. The flat trajectory and supersensitive fuze must always be considered when positioning the M42. Supplementary positions should be selected to capitalize on the M42's mobility.

8. M55 Characteristics and capabilities

a. The multiple Cal .50 Machine Gun Trailer M55 consists of a multiple Cal .50 Machine Gun Mount M45G and mount trailer M20. The 45G mount is a power driven, semi-armored gun mount with a self-contained power unit. A power charger (gasoline engine driven generator) produces electrical current to be stored in storage batteries. The electrical system operates from the storage batteries. Characteristics of the M55 mount are:

(1)	Weight	2950lbs
(2)	Height	
	(a) Wheels attached	6 $\frac{3}{4}$ in
	(b) Wheels detached	5 $\frac{6}{7}$ in
(3)	Overall length	113 3/4in
(4)	Width	82 3/8in

b. Armament. The M55 has the following characteristics, in regards to its fire power capability:

(1)	Maximum range	6766M
(2)	Maximum effective range	725M
(3)	Weapon	4 ea Cal .50 HB Machine Gun
(4)	Cyclic rate of fire	450-555- rds/min/barrel
(5)	Traverse limits	6400 $\lambda$
(6)	Elevation limits	-10° to +90°
(7)	Azimuth slew rate max	60°/sec
(8)	Elevation slew rate max	60°/sec
(9)	Allowable towed speed	
	(a) Smooth surface	10mph
	(b) Cross country	5mph

c. Ammunition fired is 4 ball to 1 tracer. Sighting is accomplished by the M18 reflex sight.

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d. The M55 mount is normally employed from the bed of a 2½ ton truck, which has been equipped with special loading and mounting equipment. The weapon may be fired from this position. The mount is capable of being lifted by medium cargo helicopters. When heli-lifting the M55 as an external load, extreme caution must be exercised to prevent the lift straps from becoming entangled with the mount and causing damage.

e. Selection of position. The M55 firing position must be selected to ensure that fields of fire are cleared of all friendly personnel.

#### 9. AN/MSS-3, Characteristics and Capabilities:

a. Mobility. The AN/MSS-3 Xenon Searchlight is mounted on a ¼ ton vehicle. Except for the electrical system which is modified with a 180 amp alternator, the vehicle is a standard M-151A1 model. It has the following characteristics:

(1) Weight	2565lbs
(2) Allowable speed	35mph
(3) Length	132in
(4) Width	64in
(5) Height	65in
(6) Cu. Ft	258

b. Characteristics:

(1) Maximum effective range (focus beam)	2000M
(2) Maximum effective range (spread beam)	3000M
(3) Beam power at 1200 rpm	120,000,000
(4) Width of beam (focus)	12A
(5) Width of beam (spread)	120A
(6) Traverse limits	6400A
(7) Elevation limits	+540A -380A

c. Selection of position: A general rule for selecting searchlight positions is to locate them on high ground without mask. Designated areas to be searched, ideally, should be level and without numerous depressions. Conditions that degrade searchlight effectiveness include, haze, dust and rain.

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d. Types of Tactical Missions:

(1) H & I. These missions may be preplanned or on-call by azimuth and elevation.

(2) Preplanned point or area illumination of key positions.  
(i.e. bridgeheads, road junctions)

(3) Defensive illumination: Perimeter and illumination of avenues of approach.

(4) Offensive illumination: Guiding of friendly elements to and from points of contact.

e. The Searchlight Commander will coordinate the following with the supported commander.

- (1) Position and fields of illumination
- (2) Light control
- (3) Restriction imposed by positioning.
- (4) Mission
- (5) Determine who will provide all classes of supply
- (6) Communications

f. Occupation: Upon occupation the searchlight crew will accomplish the following.

- (1) Occupy the assigned position
- (2) In static positions lay light on grid north
- (3) Perform required maintenance
- (4) Perform required checks and adjustments
- (5) Prepare range card
- (6) Construct field fortifications
- (7) Continue position improvement.

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AVGK-AF-S3

31 January 1968

**SUBJECT:** Operational Report Lessons Learned for Quarterly Period Ending  
31 January 1968, (RCS-CSFOR-65) (UIC-WFUZAA) (U)

Chronological Sequence of Major Actions and Events for Quarterly Period Ending 31 January 1968

- 3 Nov 67 0330 Hrs, Dusters D121, D122 and Quad E16 located at Aq 911445 fired defensive and counterfire missions. Results: enemy; 24 KIA, Friendly: 1 KIA, 6WIA. D/4/60 received credit for 6 KIA's by body count.
- 6 Nov 67 2330 Hrs, MACV Sub-Sector Advisory Headquarters (Tuy Hoa) was attacked by an unknown size enemy force. Quad .50, E5 fired 10,000 rds during the attack and received credit for 11 enemy KIA's by body count.
- 7 Nov 67 0930 Hrs, Dusters A211 and A212 supported the 9th ROK Division on a cordon and search operation. Three (3) members of A210 section were WIA by enemy M79 grenades. Dusters credited with 2 enemy KIA's by body count.
- 9 Nov 67 1730 Hrs, Dusters B211 and D242 fired counterfire missions against enemy mortar during attack on FSB ZB C10217. Result: Mortar silenced.
- 13 Nov 67 26 personnel from the 8th Transportation Group started the Quad fifty training course conducted by Hq, 4th Bn, 60th Arty.
- 14 Nov 67 2230 Hrs, Quads .50's E15 and E23 sustained minor equipment damage during mortar attack (30 rounds). Quad E23 fired counterfire mission. Negative target assessment.
- 17 Nov 67 Personnel from the 8th Transportation Group fired 42,000 rds during Quad Fifty Training Exercise.
- 18 Nov 67 Quads E15 and E23 fired 7600 rds (Aq 866287) during enemy attack on their position. Results: Negative enemy assessment.
- 20 Nov 67 Duster A112 was hit by a command detonated mine (105MM shell) vic AN 860225. The Duster was supporting 2nd Bn, 7th Cav on a search and destroy mission. Results: 1 friendly WIA, Duster A112 was a combat loss.
- 21 Nov 67 D22 (SLT) and Dusters D241 and D242 supported 1/69 Armor vic ZB 140160 on a search and destroy mission to block enemy forces moving South from Dak To.

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AVGK-AF-S3

31 January 1968

SUBJECT: Operational Report Lessons Learned for Quarterly Period Ending  
31 January 1968, (RCS-CSFOR-65) (UIC-WFUZAA) (U)

- 22 Nov 67 Hq, 2nd Plt, Btry B position attacked by recoilless rifle fire. Attack resulting in minor equipment damage, no casualties. Dusters 421L, 422L fired counterfire mission, negative assessment.
- 24 Nov 67 Dusters A111, A122, A141 and A142 supported search and destroy mission conducted by 2/7 Cav. Results: 5 enemy bunkers destroyed.
- 2 Dec 67 Section B, Battery E, 41st Arty was placed OPCON to 7th Bn, 504th Infantry to perform workparty security and convoy escort from Phan Rang to Sau Mao.
- 3 Dec 67 Duster A241 performing perimeter defense for 6/32 engaged unknown size force. Results 2 enemy KIA by body count.
- 7 Dec 67 24L (SLT) illuminated two unknown personnel outside the 4th Div Arty Radio Camp. Perimeter guards engaged with small arms. Results: unknown.
- 9 Dec 67 Visible illumination of Bong Song Bridge area by 46A (SLT) was credited with preventing an attack on the bridge by a company size enemy force moving from NE toward Bong Song Bridge.
- 9 Dec 67 1200 Hrs, Hq, Btry A, 4th Bn, 60th Arty moved from Ninh Hoa to Tuy Hoa.
- 11 Dec 67 Elements at LZ Pony came under small arms fire at 2230 hours. Dusters fired missions as 45A (SLT) provided illumination. Hostile fire silenced.
- 12 Dec 67 24A (SLT) provided illumination to assist disabled aircraft land safely.
- 13 Dec 67 45A (SLT) using infra-red mode located at LZ Uplift, detected unknown number of enemy. 45A provided visible illumination while the enemy was engaged with small arms fire. Results: Negative assessment.
- 14 Dec 67 2nd Plt, Btry B, Dak To attacked by 25 mortar rounds which resulted in light damage to equipment. The dusters fired several counterfire missions. Results: Mortars silenced, negative enemy assessment.
- 14 Dec 67 LZ Ollie received sniper fire at 2315H. 44A (SLT) illuminated suspected area. Duster fired reconnaissance by fire mission. Results: Sniper silenced.

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AVGK-AT-83

31 January 1968

SUBJECT: Operational Report Lessons Learned for Quarterly Period Ending  
31 January 1968, (RCS-CSFOR) (UIC-WFUZAA) (U)

15 Dec 67 ARVN element at Bong Song Bridge had contact at 2000 hrs with unknown enemy force 200m south of bridge. 46A (SLT) provided illumination.

17 Dec 67 24A (SLT) illuminated 4 personnel moving outside 4th Div Base Camp, perimeter patrol sent to investigate. Negative assessment.

17 Dec 67 0830 Hrs, A211 escorted B/6/32 on an artillery raid vic BP 090830.

18 Dec 67 1200 Hrs, A212 escorted B/6/32 on an artillery raid vic CP 030970.

18 Dec 67 44B (SLT) located at LZ Laramie, using infra-red mode, detected movement 200 meters outside perimeter- target engaged by Quad .50. Negative assessment.

19 Dec 67 The Float Duster located at IST Beach fired 403 rds during sapper attack on Navy installation (Market time). Replacement M42 (All2) shipped by IST on 26 Nov 67 from Qui Nhon arrived at Phan Thiet and became operational.

21 Dec 67 1100 Hrs, Dusters C211 and C212 fired 55 rounds in support of 2/5 Cav at suspected VC location. Negative assessment.

22 Dec 67 45B (SLT), using infra-red mode, detected personnel outside perimeter small arms fire provided by supported unit.

24 Dec 67 This Headquarters provided personnel and supplies to LAOV Sub-Sector Advisory Team 27. (Tuy Phuoc) to assist in repairing damage caused by sapper attack on 232300H Dec 67.

23 Dec 67 2145 Hrs, Duster Section A230 received credit for 2 KIA's while performing perimeter defense.

29 Dec 67 27A (SLT) located at JCT Hwy 1 and 6B, detected an enemy soldier attempting to blow the bridge on Hwy 1 near his location. Supported unit engaging an estimated NVA company. Initial action resulted in 17 NVA KIA's and capture of 3 Thompson MG's, 2 .45 Cal pistols, 2 B40 rockets and 25 hand grenades.

2 Jan 68 26A and 62A (SIDS) located at Camp Phuoc, detected unidentified personnel 500M outside of perimeter. Enemy personnel were engaged with small arms. Result: 5 enemy KIA.

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AVGK-AF-S3

31 January 1968

SUBJECT: Operational Report Lessons Learned for Quarterly Period Ending  
31 January 1968, (RCS-CSFOR-65) (J1C-WFUZAA) (U)

- 2 Jan 68 65A (SLT) detected personnel lying near a tree outside perimeter. CIDG fired into area. Results: Negative assessment.
- 4 Jan 68 Quad E26 hit a land mine while on convoy escort south of Camp Ehari. Results: M55 mount lightly damaged, 2½ ton truck combat loss.
- 4 Jan 68 Dusters B131 and B132 fired 1554 rds in support of ROK Unit operating west of Phu Cat AFB. Results of ROK operations: 2 rifles, 1 B40 rocket and 2 enemy captured, 5 enemy KIA. Missions fired by dusters resulted in one secondary explosion approximately the size of a 105 Howitzer round.
- 8 Jan 68 The first LCM/Duster (Riverine) mission was conducted in support of QNBAC. A Vietnamese Army Lieutenant was provided to clear fire for all missions. MACV Sub-Sector Advisory Team # 27 requested that missions be fired in vic of D/30 sapper company base camp located CR 152312. Results Negative Assessment.
- 9 Jan 68 The LCM/Duster supported the MACV Advisory Team 27 (Phuoc Sub- Sector) in firing on VC sampan moorings, shoreline storage areas and bunkered complexes. Fires were adjusted by aerial and waterborne observers.
- 12 Jan 68 The operation of the LCM/Duster combination was tested on the open sea. Operations outside of sheltered waters was unsatisfactory due to the instability of the LCM as a firing platform. However, operations in protected coastal waters, bays and rivers are very suitable for the LCM/Duster combination.
- 13 Jan 68 Quad E10 was hit by a command detonated claymore mine, vic BN 450414 while performing escorting convoy for 2nd Sqnd, 17th Cav. The 2½ ton prime mover was a combat loss. The M55 Quad .50 was undamaged. Results of action: 2 enemy captured.
- 15 Jan 68 2140 Hrs, Duster C112 while on perimeter defense at LZ Two Bits engaged enemy weapons muzzle flashes approx 700 meters from the perimeter. Results: 3 NVA KIA's, by body count, 1 recoilless rifle and 27 rounds of ammo captured.
- 20 Jan 68 1305 Hrs, Duster C142, while on perimeter defense at LZ Jupiter engaged a sniper position vic BR 610590. Results 3 NVA KIA's by body count.

**CONFIDENTIAL**

45

48

**CONFIDENTIAL**

AVGK-AF-S3

31 January 1968

**SUBJECT:** Operational Report Lessons Learned for Quarterly Period Ending  
31 January 1968, (RCS-CSFOR-65) (UIC-WTUZMA) (U)

21 Jan 68 0900 hrs, A  $\frac{1}{4}$  ton truck, with driver and one passenger, struck and detonated an anti-tank mine on QL 19. The driver was killed instantly and the passenger died at 211135H in the 71st Evac Hospital. The  $\frac{1}{4}$  ton truck was a total loss.

22 Jan 68 1200 hrs, Hq, Btry C, 4th Bn 60th Arty moved from LZ Two Bits to LZ English, RVN.

22 Jan 68 2255 hrs, Quad E6 while on convoy escort for Tuy Hon Sub-Area Command was ambushed with small arms and claymore mines. The Quad fired at suspect enemy locations in support of the convoy. Results: 12 enemy KIA's by body count.

26 Jan 68 On 281710 Jan 68, IFFV Arty requested 4th Bn 60th Arty provide AV support for A/5/27 Arty. E16 Quad and one float Duster closed A/5/27 position 281910Z Jan 68.

29 Jan 68 A241 and A242 supporting C/6/32 (CQ 153432) were attacked by mortars followed by a ground attack. Dusters fired 1000 rds during attack. 19 enemy were KIA inside the perimeter with 40 enemy KIA outside perimeter in front of A242 position. The Dusters were credited with a total of 19 enemy KIA's by body count.

29 Jan 68 LZ English was attacked by mortar and ground attack. Enemy penetrated perimeter and used satchel charges to damage ARI Helicopters. Four mortar rounds landed in close proximity to duster personnel bunker. Negative damage or casualties to C/4/60.

29 Jan 68 Quads E23 and E26 on convoy escort mission for 8th Transportation Group, from An Khe to Pleiku, were ambushed west of Mang Yang Pass on Hwy 19. Quad E26 fired 5000 rds, negative assessment. Convoy sustained minor damage during the attack.

29 Jan 68 QNSAC request the Float Duster positioned at Camp Townes be moved to Camp Granite in the city of Qui Nhon. Request was due to TNT cease fire violations.

31 Jan 68 2400 hrs Duster C121 engaged confirmed VC force located by radar at BS 871026. Results 2 VC KIA's and 2 small secondary explosions (confirmed).

**CONFIDENTIAL**

46

49

**CONFIDENTIAL**

AVGK-AF-S3

.31 January 1968

SUBJECT: Operational Report Lessons Learned for Quarterly Period Ending  
31 January 1968, (RCS-CSFOR-65) (UIC-WFU4M.) (U)

31 Jan 68 Float M42 Duster located at Camp Townes moved to Qui Nhon on  
30 Jan 68. Returned to Camp Townes on 311150H. The Duster  
expended 168 rds in defense of 84th Eng Bn (POL Storage) on  
310400 Jan 68. Negative assessment. Float Duster, located  
at Phu Tai Ammo Dump fired counterfire mission during a  
recoilless rifle attack 30 Jan 68. The recoilless rifle  
was silenced. One pallet of 105MM propellant charges was  
destroyed and 27B searchlight was lightly damaged by shrapnel  
during the recoilless rifle attack.

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**CONFIDENTIAL**

30

4th Battalion, 60th Artillery  
US Forces APO 96238  
08 February 1968 1600 hrs

**SUBJECT:** Firing the M42 from the  
Landing Craft, Mechanized

**1. PROBLEM:** The feasibility of using a Landing Craft, Mechanized as a firing platform and transport for a twin 40MM gun, M42.

**2. ASSUMPTIONS:**

- a. That there is a sea transport available to navigate and to transport the M42 in coastal waters, on rivers and inland waterways.
- b. That the sea transport would provide a sufficiently stable firing platform for the M42 to deliver accurate fires.
- c. That there are tactical requirements for the M42 to provide firepower and/or maneuver support on land areas not accessible by land route.
- d. That the road and bridge network will not significantly improve in the area.

**3. FACTS BEARING ON THE PROBLEM:**

- a. The M42 requires a stable firing platform to provide accurate point and area fires.
- b. The Landing Craft, Mechanized - 8 is capable of transporting sixty (60) tons in waters as shallow as five (5) feet and landing heavy equipment in less than three (3) feet of water.
- c. There are numerous coastal areas not accessible to the M42 by land route due to the limited road and bridge networks.
- d. The Landing Craft, Mechanized - 8 can transport the M42 to within firing range of much of the coastal area and can land the M42 in numerous areas not accessible by land route.

**4. DISCUSSION:**

- a. General: The use of a Landing Craft, Mechanized - 8 (LCM) as a firing platform and transport for the twin 40MM gun, M42 was tested during January 1968 as indicated in the attached After Action Reports. The area of operation was in the Qui Nhon bay area.
- b. Stability as a firing platform: The stability of the LCM in protected coastal waters is sufficient for the M42 to provide accurate fires. The degree of stability, type and accuracy of fires is dependent upon the amount of sea and the movement of the LCM. While the LCM is at the halt, it provides relatively the same stability as a land

Incl 5

18

5  
mass. If the LCM is moving, accurate area fire can be provided, but the gunner and azimuth tracker must keep their sights on the target and constantly adjust for both elevation and direction. This presents little problem since the M42 was designed to fire on a moving target. A reverse situation exists, in this case the weapon moves and the target is stationary; however, it is noted that in the open sea, the stability of the LCM is not sufficient for the M42. The pitch and roll of the LCM, even in a relatively calm sea, is too great to provide accurate and safe fires.

- c. Target Observation: An observer, normally the M42 squad leader, can direct fires from the LCM without difficulty. However, the observers elevation is sea level and his field of observation is restricted to the shoreline and forward slopes of the land mass. For better observation of the target area, an aerial observer should be utilized. He can direct fires in two ways. First, by adjustment in areas not visible to the gun crew and second, by marking the areas visible to the gun crew with smoke. A third method of observation can be accomplished by placing an observer in a shallow draft boat which can maneuver close to the shoreline for more accurate observation. The M42 can fire unobserved missions; however, the point of impact will be questionable. Without proper navigational aids, it is difficult to plot or determine the exact location of the LCM/M42. This type of mission cannot be fired by the M42 if friendly troops are in the area.
- d. Navigation: Navigation of the LCM is dependent upon the experience of the crew, their ability to read charts and maps and to plot a course. This is a mandatory requirement when operating in shallow waters with marginal water depths. The local tide levels must be considered since there may be as much as five (5) feet difference in water depth between high and low tides. The LCM has the capability to dig its own channel up to one (1) foot in depth in soft bottom areas. This "self-channeling" capability can only be accomplished if the LCM has full power.
- e. Beach Operations: The LCM was designed to off-load and retract up to sixty (60) tons of equipment from a beach. The actual capability is dependent upon the slope of the beach and the water depth. A beach with a sharp drop within ten (10) meters and a water depth of three (3) feet from the water's edge is considered an ideal beach. A gentle sloping beach with three (3) feet of water fifty (50) meters from the edge is considered adequate for discharging heavy equipment. On retracting equipment from the beach, the LCM must stand off approximately twice the distance as for discharging with a minimum depth of 5 to 6 feet. The LCM coxswain must keep the engines at full power and the boat perpendicular to the waves when operating at a beachhead, otherwise, the sea will broach the LCM. On retracting, the M42 must be driven forward into the LCM. If the M42 is backed into the LCM, the overwash of the waves breaking on the hull

would cause the engines to flood and watersoak sensitive equipment.

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5. CONCLUSIONS:

- a. The Landing Craft, Mechanized - 8 (LCM) is a stable firing platform for the M42 in protected coastal waters.
- b. The Landing Craft, Mechanized - 8 (LCM) cannot be used as a firing platform for the M42 in the open sea.
- c. The Landing Craft, Mechanized - 8 (LCM) can transport the M42 to areas for maneuver and/or fire support that are not accessible by land routes.

6. ACTION RECOMMENDED:

- a. That enclosed information be disseminated to the command.
- b. That operations be planned and further experiments be conducted to use the maneuver and/or firepower capability of the M42 in support of ARVN/US/FWMAF forces in areas not accessible by land especially along known waterways used by the NVA/VC, such as main river arteries, and coastal areas.

*Jesse G. Johnson*  
JESSE G. JOHNSON  
MAJ, Artillery  
S-3 Sharp-3

5 Incl

- Incl 1 After Action Report 081030 - 081530 H January 1968
- Incl 2 After Action Report 091015 - 091600 H January 1968
- Incl 3 After Action Report 181230 - 181630 H January 1968
- Incl 4 After Action Report 211030 - 211330 H January 1968
- Incl 5 After Action Report 221000 - 221800 H January 1968

53  
DEPARTMENT OF THE ARMY  
HEADQUARTERS & HEADQUARTERS BTRY  
4TH BATTALION, 60TH ARTILLERY  
APO 96238

11 January 1968

SUBJECT: After Action Report 081030H to 081530H January 1968

TO: Commanding Officer  
4th Bn, 60th Arty.  
APO 96238

1. DTG 081030H to 081530H January 1968.
2. Location - Qui Nhon area.
3. Reference - Map Qui Nhon, number 6836IV and Map Khi Dong, number 6836I.
4. Purpose - To provide Automatic Weapons fire as directed by Letter, Headquarters, Qui Nhon Sub-Area Command (Provisional) APO 96238, dated 1 January 1968, Subject; Artillery Destruction Program (U), and to determine the stability of the Landing Craft, Mechanized - 3 (LCM) as a firing platform for the twin 40MM gun, M42.
5. Participating Units:
  - a. Headquarters Battery, 4th Battalion, 60th Artillery.
  - b. 1098th Transportation Company (Medium Boat), 159th Transportation Battalion.
  - c. MACV Advisory Team # 27, Tuy Phuoc District, Binh Dinh Province.
  - d. Vietnamese Regional Forces, Tuy Phuoc District, Binh Dinh province.
6. Coordination:
  - a. Movement - By Unit Commanders of U.S. Units.
  - b. Fire Coordination - Targets selected and cleared by Vietnamese Officer and MACV Officer aboard the LCM.
7. Sequence of Events: At 081030H January 1968, an M42, Hq 101 was backed onto a LCM. All personnel aboard the LCM were briefed on the purpose of the mission, the area of operation and the enemy situation.

Incl 1 to Incl 5

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The LCM coxswain was shown the desired firing locations. He was instructed to proceed to the destined point but was cautioned not to endanger the LCM in shallow waters. The M42 would fire from whatever locations into which he could safely navigate the LCM. After the briefings, the LCM departed LST Beach, Grid CR 114226, at 1045 hours, and sailed North into the Baie de Qui Nhon in the vicinity of Grid CR 134254, when the LCM bogged down on the mud bottom. After approximately forty-five minutes of self-channeling, the LCM was freed from the mud bottom without assistance and moved to the vicinity Grid CR 133253 where four (4) missions were fired into the land mass to the Northeast and South. The Vietnamese Officer requested fire on the shoreline and mangroves from Grid CR 120315 to Grid CR 123283. In order to put effective fire into the area, the LCM/M42 had to displace to the vicinity Grid CR 1100290. On the way to the new firing location, the Vietnamese spotted a suspicious sampan. He requested that we fire a challenge signal of three round near the sampan. The sampan came along side of the LCM. The Vietnamese Officer inspected the papers of the two male occupants and found discrepancies in one set of papers. The individual was brought aboard the LCM as a detainee and the other man and the sampan were released. Upon arrival at the new firing location, aerial observation and adjustment was provided by HECV. The aerial observer adjusted fire on several known Viet Cong sampan moorings in the mangrove areas along the shoreline of the target area. Negative assessments were made. The M42 continued reconnaissance by fire along the shoreline with negative assessments.

8. LCM Stability as a firing platform: At the halt, the stability of the LCM was sufficient for the M42 to provide accurate pinpoint as well as area fires. In movement, the LCM provided the same stability; however, targets could be fired with accuracy. The M42 was re-armed with 40MM ammunition in the vicinity of Grid CR 100230. A five (5) ton truck with ammunition had been loaded onto a second LCM. At the rendezvous point, the two LCM's were lashed together and an easy transfer of ammunition was accomplished. The LCM/M42 returned to the target area and continued reconnaissance by fire. The LCM/M42 returned to LST Beach at 081530H January 1968. The disposition of the Vietnamese detainee was unknown.

9. Mission, Ammunition and Results:

- a. Twelve (12) missions were fired.
- b. Nine-hundred ten (910) 40MM HE-JP rounds were expended.
- c. Negative assessment on all missions.

CLARENCE G. BERNK  
CPT, Artillery  
Commanding

1 Incl - Overlay of area of operation

55

13

32

OVERLAY

MAP

QUI NHON, NO. 6836 IV  
HAI DONG, NO. 6836 I  
SCALE 1:50,000

LEGEND

2, 3 and 5

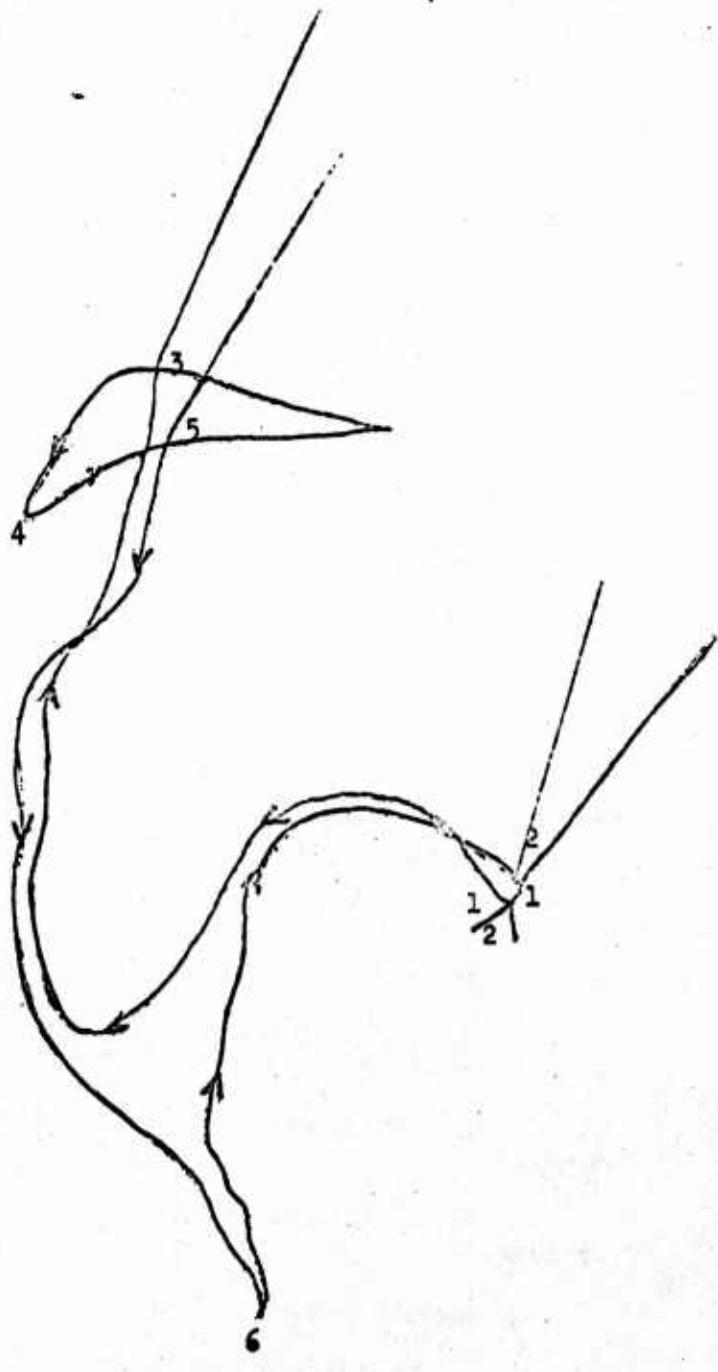
 2 : FIRING LOCATIONS

1. BOGGED DOWN POINT

4. AMMUNITION RESUPPLY

6. LST BEACH

LCM COURSE



23

07

Inclosure 1 to after action report dtd 11 January 1968.

53

36

DEPARTMENT OF THE ARMY  
HEADQUARTERS & HEADQUARTERS BTRY  
4TH BATTALION, 60TH ARTILLERY  
APO 96238

13 January 1968

SUBJECT: After Action Report 091015H to 091600H January 1968

TO: Commanding Officer  
4th Bn 60th Arty  
APO 96238

1. Date/Time/Group - 091015H to 091600H January 1968.
2. Location - Qui Nhon Area.
3. Reference - Map Qui Nhon, number 6836IV, Map Hoi Dong, number 6836I and Map Van Conh, number 6836III.
4. Purpose - To provide automatic weapons fire as directed by Letter, Headquarters, Qui Nhon Sub-Area Command (Provisional) APO 96238, dated 1 January 1968, Subject: Artillery Destruction Program (u).
5. Participating Units:
  - a. Headquarters Battery, 4th Battalion, 60th Artillery.
  - b. 1098th Transportation Company (Medium Boat), 159th Transportation Battalion.
  - c. MACV Advisory Team # 27, Tuy Phuoc Sub-sector, Binh Dinh Province.
  - d. Vietnamese Regional Forces, Tuy Phuoc District, Binh Dinh Province.
6. Coordination:
  - a. Movement - Made by Unit Commanders of U.S. Units.
  - b. Fire Coordination - Targets selected and cleared by Vietnamese Officer and MACV Drill er aboard the LCM.
7. Sequence of Events: At 091015H January 1968, an M42, Eq 101 was loaded onto a LCM. All personnel were briefed on the Mission.

Incl 2 to Incl 5

51

The ICM departed LST Beach, Grid CR 114226, at 1030 hours, for the Baie de Qui Nhon. The ICM went to a firing location in the vicinity of Grid CR 133253. At this time, an artillery observer boarded a Boston Whaler speed boat, provided by the U.S. Navy, to establish a waterborne observation post in the vicinity of Grid CR 145268. The waterborne observer adjusted several missions in the mangroves along the shoreline. Inland observation by this observer could not be made. An aerial observer was provided by IICV for adjustment of fires on four (4) sampans, vicinity Grid CR 144272. The M42 was firing for effect when a rain squall hit the area forcing the aircraft to leave the area. Negative assessment was made. The Vietnamese Officer then directed fire on the abandoned village So Cay Me, Grid CR 133260. The Vietnamese stated that the village was a known Viet Cong Stronghold and that the houses had reinforced bunkers inside. Moderate damage was inflicted on three (3) houses. At 091400H, the ICM/M42 departed the Baie de Qui Nhon for the open sea, vicinity Grid CR 060145. According to the boat crew, the sea was relatively calm. However, the pitch and roll of the ICM was great to provide accurate and safe fires. The ICM was directed to return to home station.

8. Missions, Ammunition, and Result:

- a. Fifteen (15) missions were fired.
- b. Six-hundred eight (608) 40MM HE-T rounds were expended.
- c. Negative assessment on all missions.

CLARENCE G. BLACK  
CPT, Artillery  
Commanding

2 Incl  
Overlays of area of operation

58

OVERLAY

MAP QUI NHON, NO 6836 IV  
HAI DONG, NO 6836 I

13

31

SCALE 1:50,000

LEGEND

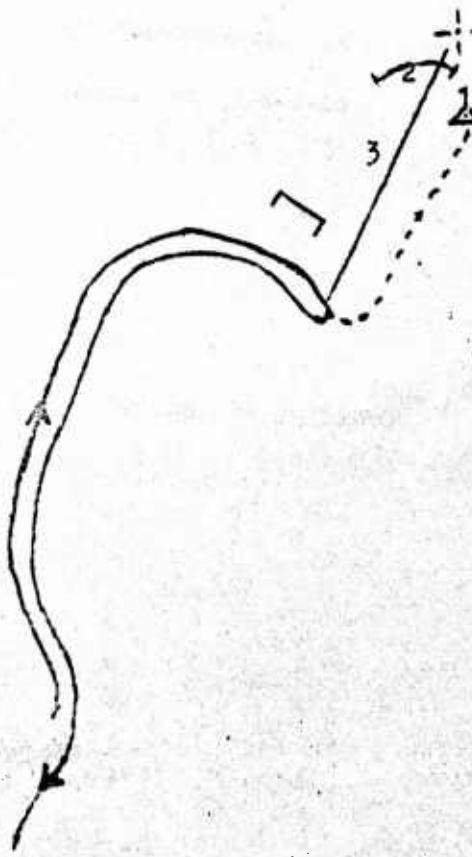
1 and 2  
TARGET AREA

3 AERIAL MISSION

1 WATERBORNE OBSERVATION POSE

LGM COURSE

--> SPEED BOAT COURSE



ENCLOSURE 1 TO AFTER ACTION REPORT, DATED 13 JANUARY 1968

56

69

07

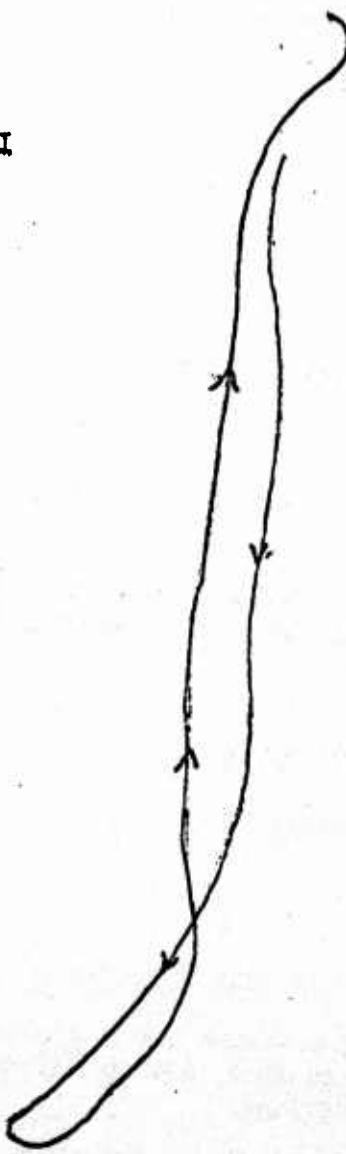
23

OVERLAY

MAP HAI DONG, NO. 6836 I  
VAN CANH, NO. 6836 III

LEGEND

LCM COURSE



15

13

ENCLOSURE 2 TO AFTER ACTION REPORT, DATED 13 JANUARY 1968

57

60

DEPARTMENT OF THE ARMY  
HEADQUARTERS & HEADQUARTERS BATTERY  
4TH BATTALION, 60TH ARTILLERY  
APO 96238

20 January 1968

SUBJECT: After Action Report 181230H to 1811630H January 1968

TO: Commanding Officer  
4th Bn, 60th Arty  
APO 96238

1. Date/Time/Group: 181230H to 181630H January 1968.
2. Location - Qui Nhon area.
3. Reference - Map Qui Nhon number 6836IV and Map Hai Dong, number 6836L.
4. Purpose - To provide Automatic Weapons fire as directed by Letter, Headquarters Qui Nhon Sub-area Command (Provisional) APO 96238, dated 1 January 1968, Subject: Artillery Destruction Program (U).
5. Participating Units:
  - a. Headquarters Battery, 4th Battalion, 60th Artillery.
  - b. 1098th Transportation Company (Medium Boat), 159th Transportation Battalion.
6. Coordination:
  - a. Movement - Made by Unit Commander of U.S. Units.
  - b. Fire Coordination - Made prior to movement by Commanding Officer Headquarters Battery, 4th Battalion, 60th Artillery with District Chief, Tuy Phuoc District, Binh Dinh Province.
7. At 181245H, a LCM/M42 departed LST Beach, Grid CR 114226 for the Baie de Qui Nhon. The LCM went to a firing location, vicinity Grid CR 133253 and the M42 fired on the abandoned village So Cay Me, Grid CR 133260, a known Viet Cong village. Heavy damage was done to five (5) houses. Then under the direction of Lt Vermillion, Boat Platoon Leader, the LCM moved to the vicinity of Grid CR 144257. On the way to this location a large cylinder was observed near a small cave, vicinity Grid CR 136251. The cylinder appeared to be a bamboo structure approximately three (3) feet in

Incl 3 to Incl 5

diameter and twelve (12) feet long. The cove and cylinder were fired on. A small secondary explosion came from the cave. The cave entrance was closed and the cylinder destroyed. After getting into the cove, missions were fired into the abandoned village Hai Loc, Grid square CR 1428, another known Viet Cong village and the mangrove area, Grid CR 1428, a known Viet Cong sampan mooring. Another mission was fired into vicinity Grid CR 147250. There were negative assessments on these missions. Lt. Vermillion was queried about the possibilities of using the beach, vicinity Grid 130261, as a landing site for the M42. He felt that it could be done. However, there was insufficient water 300 meters either side of the reference point to move any closer than 100 meters to the beach. Additionally, there was approximately three (3) feet of water with a mud bottom at the closest point. These conditions are undesirable for a beach landing. The LCM/M42 returned to home station.

8. Missions, Ammunition, and results:

a. Twenty (20) missions were fired.

b. Six-hundred ninety (690) 40MM HE-IT rounds were expended

c. Mission Results:

(1) A small secondary explosion resulted when firing into a cave. The cave entrance was closed.

(2) An unidentified wooden or bamboo twelve (12) by three (3) foot cylinder was destroyed.

(3) Heavy damage to five (5) houses, So Cay Me Village."

CLARENCE G. BERK  
CPT, Artillery  
Commanding

62

OVERLAY

MAP QUI NHON, NO. 6836 IV  
HAI DONG, NO. 6836 I

SCALE 1:50,000

LEGEND

1, 2, 3, 4

4

FIRING LOCATIONS

2

SECONDARY EXPLOSION

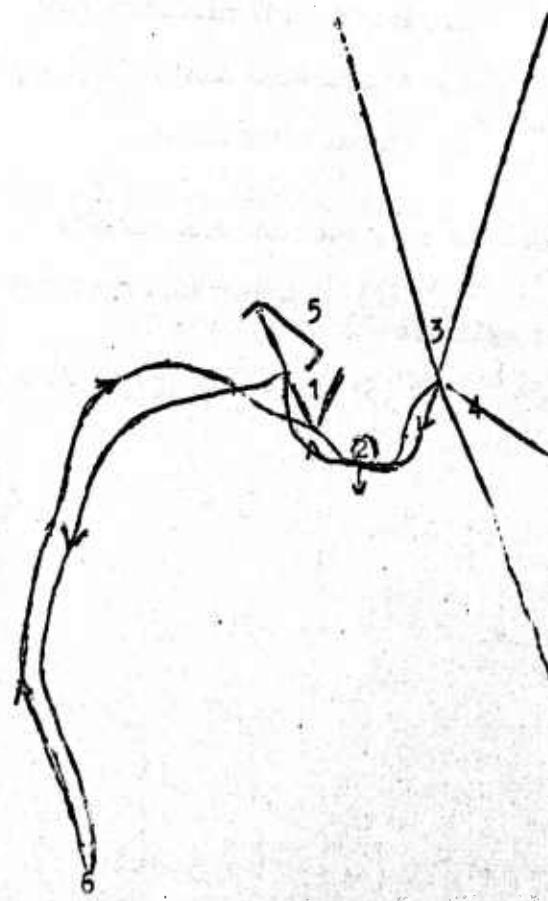
5

ATTEMPTED BEACH  
LANDING

6

LST BEACH

LCM COURSE



INCLOSURE 1 TO AFTER ACTION REPORT DTD 20 JAN 68

60

63

DEPARTMENT OF THE ARMY  
HEADQUARTERS & HEADQUARTERS BTRY  
4TH BATTALION, 60TH ARTILLERY  
APO 96238

23 January 1968

SUBJECT: After Action Report 211030H to 211330H January 1968

TO: Commanding Officer  
4th Bn, 60th Arty  
APO 96238

1. Date/Time/Group: 211030H to 211330H January 1968.
2. Location: Qui Nhon area.
3. Reference: Map Qui Nhon, number 6836IV and Map Hai Dong, number 6836I.
4. Purpose: To provide Automatic Weapons fire as directed by Letter, Headquarters, Qui Nhon Sub-Area Command (Provisional) APO 96238, dated 1 January 1968, Subject: Artillery Destruction Plan (U).

5. Participating Units:

- a. Headquarters Battery, 4th Battalion, 60th Artillery.
- b. 544th Transportation Company (Medium Boat), 159th Transportation Battalion.
- c. Vietnamese Regional Forces, Tuy Phuoc District, Binh Dinh Province.

6. Coordination:

- a. Movement - Made by Unit Commanders of U.S. Units.
- b. Fire Coordination - Targets selected and cleared by Vietnamese Officer aboard the LCM.

7. Sequence of Events:

At 211030 January 1968, a M42, Eq 101 was loaded onto a LCM. All personnel were briefed on the mission. At 1100 hours, LTC Monghan, Battalion Commander, 4th Battalion, 60th Artillery boarded the LCM. The LCM/M42 departed IST Beach Grid CR 114226 for a firing location in the vicinity of Grid CR 110290. The LCM did not have maps or charts of the area nor was the crew familiar with the waters. Consequently, they ran into some submerged rocks in the vicinity of Grid CR 110257.

Inc/4 to Inc/5 61

64

After freeing the LCM from the rocks, the LCM crew used the map from the M42 to chart a safe route to the firing location. When the LCM/M42 reached location, the M42 made reconnaissance by fire along the shoreline from Grid CR 119315 to CR 1242861. The target area is a known Viet Cong sampan mooring and infiltration route from the South China Sea.

8. Missions, Ammunitions, and Results:

- a. Twelve (12) missions were fired.
- b. Four-hundred fifty (450) 40MM HE-IT rounds were expended.
- c. Negative assessment on all missions.

  
CLARENCE G. BURK  
CPT, Artillery  
Commanding

1 Incl - Overlay of area of operation

62

65

OVERLAY

13

32

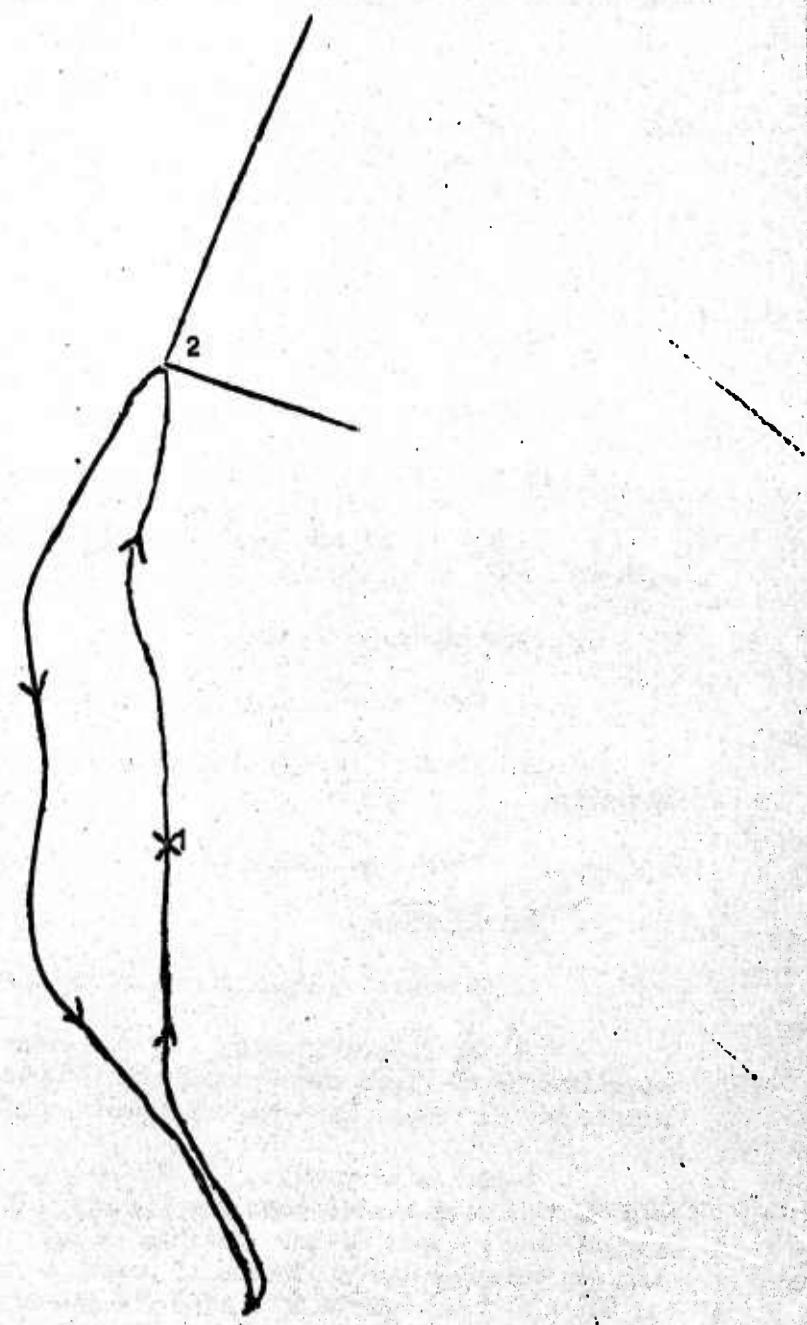
MAP QUI NHON, NO. 6836 IV  
HAI DONG, NO. 6836 I

SCALE 1:50,000

LEGEND

1. SUBMERGED ROCKS
2. ~~TARGET AREA~~

23  
07



INCLOSURE 1 TO AFTER ACTION REPORT, DATED 23 JANUARY 1968

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66

DEPARTMENT OF THE ARMY  
HEADQUARTERS & HEADQUARTERS BATTERY  
4TH BATTALION, 60TH ARTILLERY  
APO 96238

28 January 1968

SUBJECT: After Action Report 221000H to 221800H January 1968

TO: Commanding Officer  
4th Bn, 60th Arty  
APO 96238

1. Date/Time/Group: 221000H to 221800H January 1968.
2. Location: Qui Nhon Area.
3. Reference: Map Hai Dong, number 6836I.
4. Purpose: To determine if a M42 could land and maneuver on the peninsula northeast of Qui Nhon.
5. Participation Units:
  - a. Headquarters Battery, 4th Battalion, 60th Artillery.
  - b. 1098th Transportation Company (Medium Boat), 159th Transportation Battalion.
  - c. Vietnamese Regional Forces, Tuy Phuoc District, Binh Dinh Province.
6. Coordination:
  - a. Movement - Made by Unit Commanders of the U.S. Units.
  - b. Fire Coordination - A Vietnamese Officer was with the M42 for coordination of fires even though the intentions were not to fire unless absolutely necessary because there was no infantry support available.
7. Sequence of Events: At 221000H January 1968, two (2) M42's, Hq 101 and Hq 103, were loaded onto one (1) LCM. All personnel were briefed on the purpose and conduct of the mission. A M42, Hq 103 was to make a beach landing and traverse the peninsula if possible while M42, Hq 101 was to remain on the LCM as a reserve if Hq 103 did get into a fire fight. The proposed landing site was Grid CR 150356. The travel time from IST Beach, Grid CR 114226 to the landing site was two (2) hours. The LCM crew considered the sea relatively calm and the surf good. The LCM made a perpendicular approach

Line 4 & Line 5

64

to the landing site and moved to within twenty (20) meters of the beach. The boat ramp was let down immediately and Hq 103 moved onto the beach with no difficulty. The LCM raised its ramp and retracted from the beach to wait in the open sea for the return of Hq 103. The M42 was able to maneuver without difficulty on the peninsula. The northern portion of the peninsula is sandy with large sand dunes and scattered patches of vegetation. The sand dunes have gentle slopes on the east and sheer cliffs on the west. The M42 must travel on or over these large dunes with caution for vehicle safety. The Southern portion is covered with small sand dunes or bumps and some rocks with moderate to heavy vegetation. From the peninsula, observation and field of fire on the mangroves in the upper Baie de Qui Nhon is excellent. Hq 103 spent approximately ninety (90) minutes on the peninsula. On retracting from the beach, the M42 was driven into the surf and onto the LCM. The distance was approximately 100 meters and water depth was approximately four (4) feet. The reason for the difference in beaching and retracting distance is the off beach load weight of the LCM. The LCM coxswain must keep the craft perpendicular to the surf and the engines at full throttle during all beach operations otherwise the craft could become broached. After raising the ramp, the LCM was backing off the beach when the engines lost power due to water in the fuel. The LCM became broached. The crew immediately called their company for assistance and they started to clean the fuel filters and gas lines for the third time that day. After two (2) hours of maintenance and maneuver by the crew, the LCM freed itself. Coincidentally, the two (2) tow crafts had just come into view when the LCM broke free. The three boats and two M42's returned to LST Beach. On the way back, the beach and the surf was discussed with Lt Vermillion, boat platoon leader. He stated that the boat had been designed for just this type of mission. The surf was relatively calm and could have been much rougher. The slope of the beach could have been a little steeper thereby providing more water to the boat; however, Lt Vermillion said he had to consider the beach ideal. When driving the M42 into the surf and during boat broachment, radios must be covered and protected from becoming wet and subsequently inoperative.

8. Missions, Ammunition and Results: None.

  
CLARENCE G. BERK  
CPT, Artillery  
Commanding

1 Incl - Overlay of area of operation

65

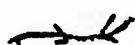
68

OVERLAY

MAP HAI DONG  
NO. 6836 I

SCALE 1:50,000

LEGEND



LGM COURSE

M42 ROUTE

32  
16

27  
11

QUI NHON

ENCLOSURE 1 TO AFTER ACTION REPORT, DATED 28 JANUARY 1968

66

b9  
AVCK-AF-83

31 January 1968

SUBJECT: Operational Report for Quarterly Period Ending 31 January 1968,  
(RCS-CSNOM) (UIC-WTUZAA) (U)

Program of Instruction for Replacement Training in Duty MOS 13F

1. Personnel assigned for duty as M42 crewman received the following instruction:

<u>SUBJECT</u>	<u>HOURS</u>
Characteristics, nomenclature, and description of the self-propelled twin 40MM Gun M42	3
Organization of crew for the self-propelled twin 40MM Gun M42 and duties of personnel	1
Assembly, disassembly, and firing cycle of 40MM dual automatic M2A1	16
Radio Procedures	2
General characteristics and description of fire control devices	1
Theory and operation of fire control devices	2
Orientation	2
Before engagement checks	2
Storage of equipment and personnel gear for tactical operations	2
Operations against ground targets	6
Ammunition, general characteristics, handling, on carriage and safety precautions	1
Operation and Preventive maintenance	24
	total hours
	62

2. Personnel assigned for duty as M55 crewmen will receive the following instructions:

<u>SUBJECT</u>	<u>HOURS</u>
General nomenclature and function of M55	4
Duties of Personnel	3
Assembly and disassembly of Cal .50 Machine Gun	8

Incl 6

67

AVGK AR-S3

31 January 1968

SUBJECT: Operational Report for Quarterly Period Ending 31 January 1968,  
(EOC-COMINT) (UIC-WFUZZA) (U)

70

Headspace and timing	5
Boresighting	3
Maintenance, Mount M55	3
Maintenance, Truck, 2 $\frac{1}{2}$ ton 6x6	6
Drivers Training	2
Radio procedures	<u>2</u>
total hours	42

68

AVGK-AF-S3

31 January 1968

SUBJECT: Operational Report for Quarterly Period Ending 31 January 1968,  
(RGS-CASFOR-68) (UIC-WFUZAA) (U)

Program of Instruction for M55 training conducted for an outside agency

Nomenclature and function of M55	4 hours
Duties of personnel	3 hours
Assembly and disassembly of Browning Cal .50 HB, MG, M2	8 hours
Headspace and timing	6 hours
Boresighting	3 hours
Maintenance	8 hours
Weapons familiarization fire	<u>16 hours</u>
Total hours	48 hours

72

DEPARTMENT OF THE ARMY  
HEADQUARTERS, 4TH BATTALION, 60TH ARTILLERY  
APO 96238

AVGK-AF-SI

51 January 1968

SUBJECT: Major component failure in the AN/MMS-3 Searchlight

TO: Commanding Officer  
4th Bn, 60th Arty  
APO 96238

1. Problem: To determine the causes for the excessive number of converter and igniter failures on the AN/MMS-3 Searchlight.

2. ASSUMPTION:

a. The converter and igniter failure are caused by sudden power surges when power is applied to the AN/MMS-3.

b. The current operating procedures contributing to these failures includes:

(1) Mission duration limited to five minutes.

(2) The power switch turned to the off position at the completion of each mission.

(3) No time restriction for the power to remain off between missions.

3. FACTS BEARING ON THE PROBLEM:

a. Replacement igniters and converters are very difficult to obtain and must be sent to CONUS for repair.

b. Support maintenance does not have the capability of repairing igniters and converters.

c. The time required for faulty converters and igniters to be evacuated to CONUS for repair and returned to using unit is in excess of forty days.

4. DISCUSSION:

a. An examination of maintenance between 1 March 1967 to

1 Oct 68

70

13

1 October 1967 disclose that the primary causes of searchlight failure were due to converters and igniters. Records indicate that 71.5% of all searchlight deadlines could be attributed to the failure of one of these two parts. Reason, frequency and percentage of failure during the period is attach at inclosure 1.

b. A test was conducted during the period 1 Dec 67 thru 31 January 1968 in effort to determine a method to reduce the frequency of searchlight failures. As a basis for evaluation, the above assumption were utilized in conducting the test. Results of this test are attached at inclosure 2.

c. Eighteen searchlights were employed in two groups of nine searchlights each, further identified as groups A and B.

(1) Group A operators were instructed not to turn the power switch to the off position after each mission unless there was a scheduled or anticipated time lapse of twenty minutes or more between missions. Additionally, the operators were informed that no time limit restrictions were placed on the lenght of the mission. During the test period, this group performed and average of 17 missions each night.

(2) Group B was the control group and performed an average of 13 missions each night under the current operating procedures, that is, turning the searchlight power switch off after each mission and limiting the length of mission to a maximum of five minutes, unless a special on call mission was in effect.

#### 5. CONCLUSIONS:

a. The data gathered during the test indicated that the percentage of failures of the converters and igniters are significantly reduced by modifying the current operating procedures as stated in paragraph 4c(1).

b. A slight increase in failure of the lamp and the blower motor can be expected since the lamp is illuminated longer and the blower motor is operating for longer periods of time. These parts are considerably easier to obtain and are considered a more acceptable failure risk than the constant failures of the critical igniters and converters.

#### 6. ACTION RECOMMENDED:

a. Continue research utilizing selected elements throughout the Republic of Vietnam.

b. Place no restrictions on the length of missions.

c. Place power switch in "OFF" position when a time lapse of 20 to 40 minutes is scheduled between missions.

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d. Leave power switch in the "ON" position when missions are scheduled at less than 20 minutes intervals.

e. During waiting periods, use searchlights in the infrared mode.

*Gene W Johnson*  
GENE G. JOHNSON  
Maj, Artillery  
S3 Sharp 3

2 Incl

Incl 1: Results of Operating Test on AN/MSS-3 Searchlight

Incl 2: Searchlight Component Failure, 1 Mar 1967 - 1 Oct 67

72

.75.

DEPARTMENT OF THE ARMY  
BATTALION B (SEARCHLIGHT), 29TH ARTILLERY  
APO 96238

1 February 1968

SUBJECT: Results of Operating Test on AN/MSS-3 Searchlight

TO: Commanding Officer  
4th Bn, 60th Arty  
APO 96238

1. The following tabulated data are the results of a test conducted during the period 1 December 1967 thru 31 January 1968. Group A represents the test units, while Group B indicated the control element.

2. During the test

a. Group A

- (1) Performed an average of 17 missions each night.
- (2) Had no restrictions on mission time length.
- (3) Placed the power switch in the "OFF" position when a time lapse of 20-40 minutes between missions occurred.
- (4) Left the power switch in the "ON" position when missions were scheduled within 20 minutes of one another.

b. Group B

- (1) Performed an average of 18 missions each night, observing current tactical doctrine.
- (2) Was restricted to a maximum of 5 minutes on mission time length.
- (3) Had no restriction on time lapse between missions with the power switch in the "OFF" position.

Incl 1 to Incl 9

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c. Failure comparision between Groups A & B during 1 Dec 67-  
31 Jan 68

SET	NUMBER OF EQUIP FAILURES	NUMBER OF MISSIONS	SLT	NUMBER OF EQUIP FAILURES	NUMBER OF MISSIONS
22A	0	17	22B	2	18
24A	0	21	25A	1	18
26A	1	19	25B	0	17
44B	0	11	24B	2	17
45A	0	11	25A	0	17
46A	0	29	26B	1	18
27A	4	10	62B	0	17
65A	1	16	63A	1	17
67B	0	17	63B	1	12
AVERAGE	.67	16.7	.88		17.5

d. Type of failure comparison between group A & B during  
1 Dec 67-31 Jan 68

COMPONENT PART	GROUP A	GROUP B
CONVENTER	1	4
IGNITER	0	1
LAMP	1	0
FLOWER MOTOR	1	1
RELAY PANEL	1	0
RELAY K-14		
CONTROL BOX	1	0

RICHARD L. PADDACK  
CPT, Artillery  
Commanding

7-6

79  
DEPARTMENT OF THE ARMY  
BATTERY D (SEARCHLIGHT), 29TH ARTILLERY  
APO 96238

1 February 1968

SUBJECT: Searchlight Component Failure, 1 March 1967 to 1 October 1967.

TO: Commanding Officer  
4th Bn, 60th Arty  
APO 96238

The following tabulated data represents the total major component searchlight part failures, operating under current practices during the period 1 March 1967 to Oct 67. This record includes all 36 assigned searchlights.

<u>COMPONENT</u>	<u>NUMBER OF FAILURES</u>	<u>PERCENTAGE OF FAILURES</u>
CONVERTER	67	59.7
IGNITER	13	11.6
LAMP	7	5.7
BLOWER MOTOR	6	5.3
RELAY PANEL	5	4.5
RELAY K-14	4	4.1
CONTROL BOX	1	.9

RICHARD L. P. DDACK  
CPT, Artillery  
Commanding

Incl 2 to Incl 9

78

DEPARTMENT OF THE ARMY  
HEADQUARTERS, 4TH BATTALION, 60TH ARTILLERY  
APO 96238

AVCK-AF-S3

31 January 1968

SUBJECT: Letter of Transmittal

THRU: Commanding Officer  
41st Artillery Group  
APO 96368

TO: Commanding General  
JTFORCEV Artillery  
APO 96350

The attached letter, dated 31 January 1968, SUBJECT: Determining Minimum Quadrant Elevation is Submitted for Review and Approval.

FOR THE COMMANDER:

1 Incl  
as

*Floyd L. Brown*  
FLOYD L. BROWN  
1LT, Artillery  
Adjutant

*Incl 10*

*76*

19

DEPARTMENT OF THE ARMY  
HEADQUARTERS, 4TH BATTALION, 60TH ARTILLERY  
APO 96238

AMMO-AFM-53.

31 January 1968

SUBJECT: DETERMINING MINIMUM QUADRANT ELEVATION

TO: SEE DISTRIBUTION

1. Reference: This letter is effective upon receipt and all previous letters or instructions concerning procedures for computing minimum base quadrant elevation for the M42 are superseded and will be destroyed.

2. General:

a. Army regulations require that a projectile fired with a fuse other than V7, clear friendly troops by 5 meters vertical interval and that the quadrant elevation computed for a point 5 meters above friendly troops be modified. Unless otherwise notified, it is always assumed that the crest is occupied by friendly troops.

b. Minimum Quadrant Elevation for the 40MM M42 cannot be computed using the procedures outlined in FM 6-40 as all necessary information is not contained in FM 40MM-4-5. The procedures for computing minimum Quadrant elevation as outlined in FM 6-40 are for field artillery weapons with a relatively low muzzle velocity. However, high muzzle velocity and flat trajectory of the 40MM gun and tank main guns are comparable. Therefore, in order to compute a Minimum Quadrant Elevation for the 40MM M42 that will comply with Army regulations and at the same time provide the maximum AW fire support, the procedures outline in FM 17-12, as shown below, will be used.

3. Determining minimum Quadrant Elevation:

a. Upon occupation of a position, the crew of each M42 determines minimum quadrant elevation. Minimum quadrant elevation is the lowest elevation at which the gun can be fired with assurance that all projectiles will clear the mask to the front, including allowance for the safety of friendly troops occupying the mask, when appropriate. M42 fire units are not permitted to fire below minimum quadrant elevation except in cases of extreme emergency.

b. The M42 crew determines minimum quadrant elevation for the M42 by combining the following factors:

(i) Angle of site to Mask: This is the angle between the horizontal and the line of the bore when the gun is laid on the highest point of the mask; a single narrow obstruction, such as a tree sticking above the mask, will not be used to compute Minimum Quadrant Elevation. However, the azimuth to the obstruction will be recorded and missions

Load 1 to Load 10

AVGK-AF-53

31 January 1968

SUBJECT: Determining Minimum Quadrant Elevation

requested for that azimuth will not be fired. Determine angle of site to mask as follows:

(a) With the top cover open, breech block down, and the boresight tool installed in the breech of the left 40MM gun, the squad leader sights along the tube as the gunner elevates the gun until the squad leader's line of sight just clears the highest part of the mask. The squad leader continues to sight along the tube while the gunner traverses the gun between the limits of the firing sector to insure the highest part of the mask has been selected.

(b) With the gun laid on the highest point of the mask the squad leader measures the existing elevation of the gun by using the gunner's quadrant. This reading is recorded to the nearest tenth of a mil as the angle of site to mask.

(2) Elevation for range to mask: Determine the elevation or range from the firing position to the top of the mask as follows:

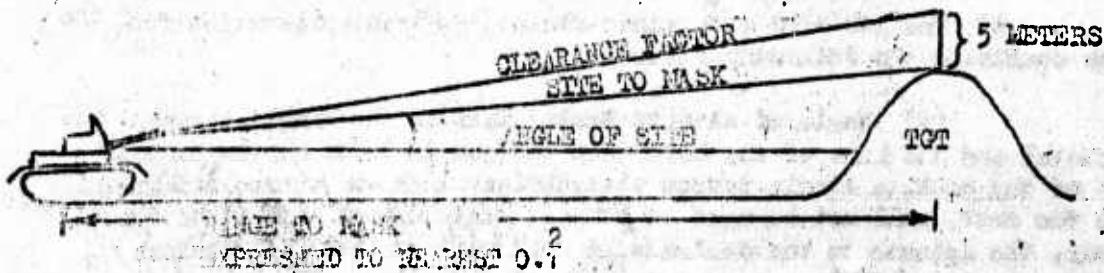
(a) Determine the range to the mask by the most accurate means available.

(b) Obtain the mil elevation for that range from the tabular firing table (FT 40AA-4-5) and record it to the nearest one-tenth of a mil as elevation for range to mask.

(3) Clearance factors: To insure positive clearance of the mask when firing, record a 2 mil clearance factor, 2 mils will always be used.

(4) Troops safety factor: If the mask is occupied by friendly troops, include a safety factor in the minimum quadrant elevation. The safety factor consists of the value, expressed in mils of a height of 5 meters at the range to the mask. (Range expressed to the nearest 100M example: 1200 meters is expressed as 1.2 when used in the mil relation formula). Determine it by using the mil relation as follows:

(a) The relationship of the size of the angle ( $\alpha$ ), and the length of the sides (R) and the width between the ends of the sides (W) is expressed as the mil relation or:  $\frac{W}{R \times \alpha}$



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AVGX-4F-S3

SUBJECT: Determining Minimum Quadrant Elevation

31 January 1968

(b) Because the mil relation is constant, other units of measure may be substituted for meters in expressing width or range; however, the relation holds true only if both W and R are expressed in the same unit, for example, if the sides of a 1 mil angle are extended to 1000 yards, the width between the ends of the sides is 1 yard.

(c) The mil relation may be converted into a formula by removing the factor that is to be determined. Thus  $\frac{W}{R \times \mu}$  becomes,

$$W = R \times \mu \text{ or }$$

$$R = \frac{W}{\mu} \text{ or }$$

$$\mu = \frac{W}{R}$$

as a memory aid, the word WORM may be used, meaning W over R time  $\mu$  or

$$\frac{W}{R \times \mu}$$

(d) The mil relation holds true whether the W factor is in a horizontal or vertical plane, as long as the mil angle is measured in the same plane.

c. Computation of Minimum Quadrant Elevation. (Illustrated at Incl 1).

(1) When the mask is not occupied by friendly troops, the Minimum Quadrant Elevation consists of three elements.

(a) Angle of site (measure at Gun)

(b) Elevation for range to mask (Determine from FT 40AA-A-5)

(c) 2 mil clearance factor (Constant factor)

(2) When the mask is occupied by friendly troops, the minimum quadrant elevation consist of four elements.

(a) Angle of site (measure at Gun)

(b) Elevation for range to mask (Determined from FT 40AA-A-5)

(c) 2 mil clearance factor (constant)

(d) Troop safety factor (computed)

If the sum of the elements is fractional, round off the sum to the next higher whole mil.

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3

AVBN-AF-S3

31 January 1968  
82

SUBJECT: Determining Minimum Quadrant Elevation

4. Safety and coordination: All masks are assumed to be occupied and minimum quadrant elevation will be computed using the 5 meter troop safety distance. In the event the quadrant elevation for a fire mission is lower than the minimum quadrant elevation the mission will not be fired and the squad leader will immediately report to the requesting unit, "Unsafe to fire below Minimum Quadrant Elevation." If after being informed that it is unsafe to fire the mission, the requesting unit insists the mission be fired the mission will be fired and the squad leader will inform his platoon leader as soon as the tactical mission permits. A complete written report, (Who, What, When, Where, Why, and How), will be submitted to this headquarters, attention S3, within 5 days following the Incident.

FOR THE COMMANDER

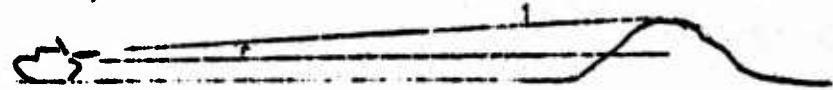
*Homer O. Scott*  
HOMER O. SCOTT  
CPT, Artillery  
Adjutant

1 Incl

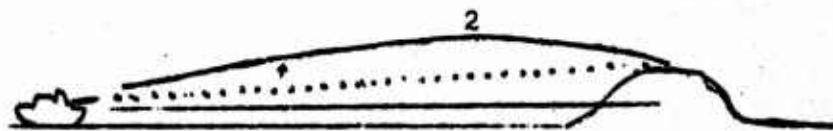
1. MQE Diagram

80

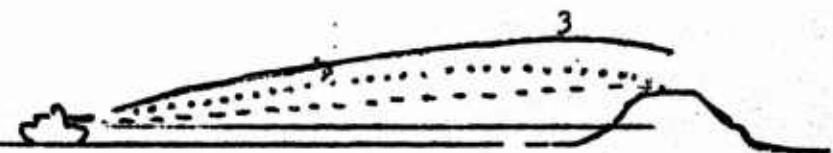
83.



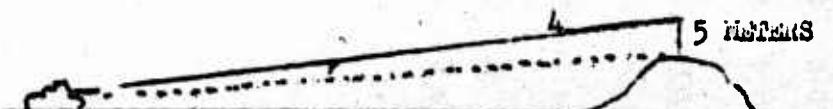
A. ANGLE OF SITE (TO MASK) (ANGLE 1)



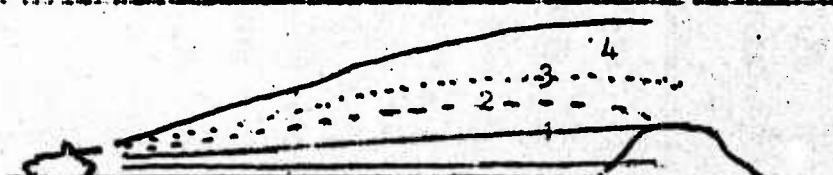
B. ELEVATION FOR RANGE (ANGLE 2)



C. CLEARANCE FACTOR (ANGLE 3)



D. TRUE SAFETY FACTOR (angle suspended by  
5 METERS AT THE RANGE TO THE MASK) (ANGLE 4)



E. MINIMUM ELEVATION IS THE SUM OF THE FOUR ANGLES.

Incl 1 to Incl 4 to Incl 10

Comparison of Present and Proposed MOE

Date used for Comparison

Site to Mask 30.0 °W

Range to Mask 25.5 S. Shout

	100	200	300	400	500	600	700	800	900	1000	1100
Proposed	82.7	58.4	50.9	47.5	45.8	44.9	44.6	44.7	45.0	45.4	45.9
Current	45.7	46.4	47.3	48.1	43.9	44.4	45.6	45.6	47.6	48.6	44.7
Range to Mask	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200
Proposed	46.7	47.4	48.4	49.4	50.5	51.7	53.0	54.4	55.9	57.5	59.1
Current	45.8	47.0	48.3	49.6	51.0	52.6	54.1	55.9	57.6	59.5	61.1
Range to Mask	2300	2400	2500	2600	2700	2800	2900	3000	3100	3200	3300
Proposed	60.9	62.8	64.8	65.9	66.2	71.5	74.0	76.7	79.4	82.3	85.3
Current	63.0	65.1	67.2	69.4	71.6	74.2	76.9	79.6	82.5	85.5	86.8
Range to Mask	3400	3500									
Proposed	88.5	91.8									
Current	92.1	95.6									

code for Graph - Proposed

code for Graph - Current

Comparison of Current and Proposed MCZ  
Data used for Comparison  
Site to Mask 10.0 miles  
Range to Mask as shown

	<u>RANGE TO MASK</u>										
	100	200	300	400	500	600	700	800	900	1000	1100
Proposed	62.7	38.4	30.9	27.5	25.9	24.9	24.6	24.7	25.0	25.4	25.9
Current	25.7	26.4	27.3	28.1	28.9	24.7	25.6	26.6	27.6	28.6	24.7
	<u>RANGE TO MASK</u>										
	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200
Proposed	26.7	27.4	28.4	29.4	30.5	31.7	33.0	34.4	35.9	37.5	39.1
Current	25.8	27.0	28.3	29.6	31.0	32.6	34.1	35.9	37.6	39.3	41.1
	<u>RANGE TO MASK</u>										
	2300	2400	2500	2600	2700	2800	2900	3000	3100	3200	3300
Proposed	40.9	42.8	44.8	46.9	49.2	51.5	54.0	56.7	59.4	62.3	65.3
Current	43.0	45.1	47.2	49.4	51.6	54.2	56.9	59.6	62.5	65.5	68.8
	<u>RANGE TO MASK</u>										
	3400	3500									
Proposed	63.5	71.8									
Current	72.1	75.6									

Code for Graph- Proposed ~~~~~~

Code for Graph- Current -----

Comparison

Current MOP and Proposed MOE

Data used for Comparison

Site to Mask 20.0%

Range to Mask as Shown

RANGE TO MASK 100 200 300 400 500 600 700 800 900 1000 1100

Proposed	72.7	48.4	40.9	37.5	35.9	34.9	34.6	34.7	35.0	35.4	35.9
Current	35.7	36.4	37.2	38.1	38.9	34.7	35.6	36.6	37.6	38.6	34.8

RANGE TO MASK 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200

Proposed	36.7	37.4	38.4	39.4	40.5	41.7	43.0	44.4	45.9	47.5	49.1
Current	35.9	37.1	38.3	39.6	41.0	42.6	44.1	45.9	47.6	49.3	51.1

RANGE TO MASK 2300 2400 2500 2600 2700 2800 2900 3000 3100 3200 3300

Proposed	50.9	52.8	54.8	56.9	59.2	61.5	64.0	66.7	69.1	72.3	75.3
Current	53.0	55.1	57.2	59.4	61.8	64.2	66.9	69.6	72.5	75.5	78.8

RANGE TO MASK 3400 3500

Proposed	78.5	81.8
Current	82.1	85.6

Code for Graph - Proposed —\*—

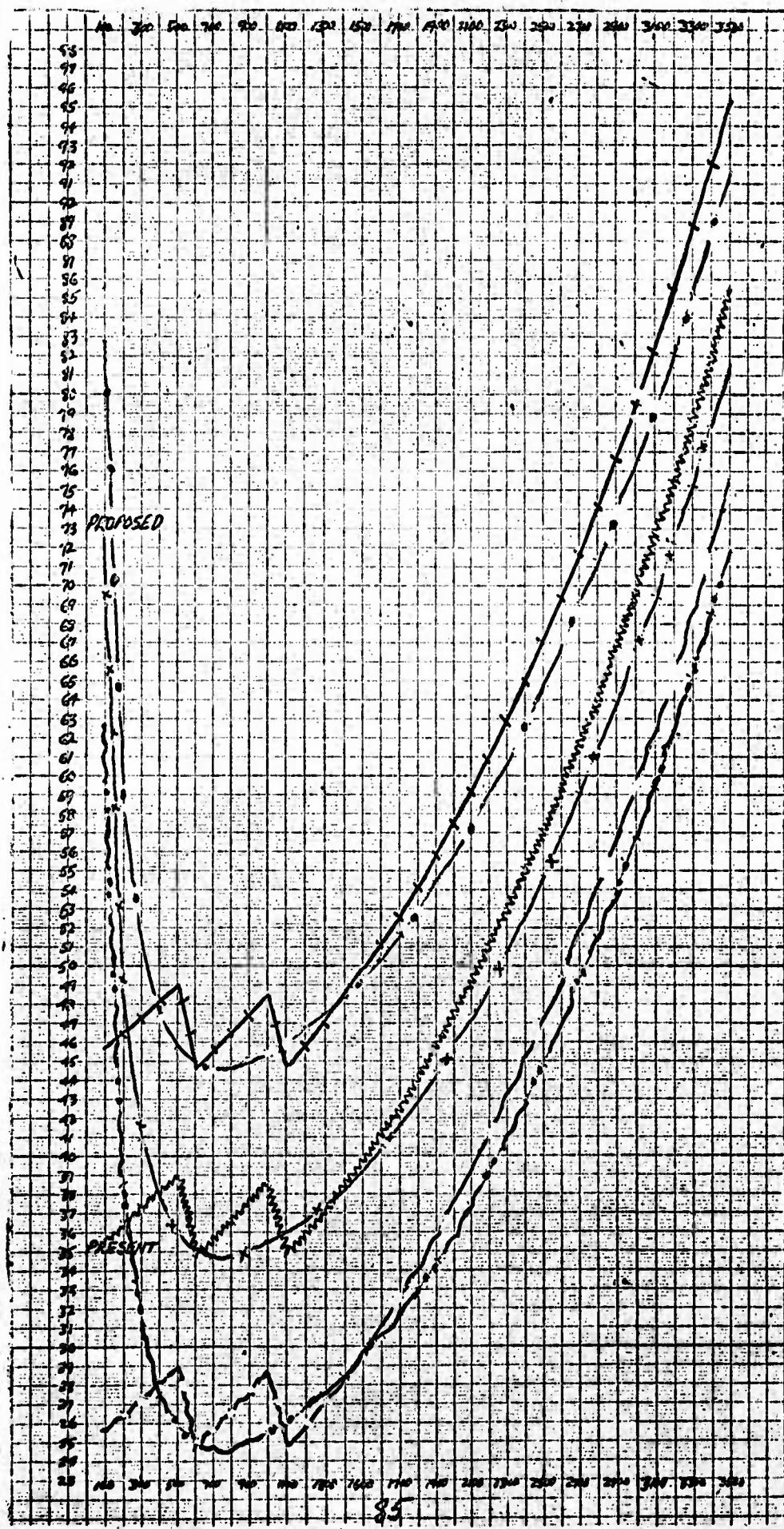
Code for Graph - Current ~~~~~

7/1/47 Encl 10

84

86

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85

42  
86

CORRECTED COPY

DEPARTMENT OF THE ARMY  
HEADQUARTERS, 4TH BATTALION, 60TH ARTILLERY  
APO 96238

AVGK-AP-S3

31 October 1967

SUBJECT: Procedure for Computing Minimum Safe Quadrant Elevation for the M42

TO: See Distribution

1. Effective immediately, the following procedures will be followed for computing minimum safe quadrant for the M42's when required to clear a mask.

2. Minimum safe quadrant consists of the following elements, which are obtained from the source indicated.

a. Angle of site is measured at the gun.

b. Comp site factor is extracted from comp site factor table, FT 40-A4-A-3 and attached as Inclosure 1.

c. Elevation to achieve range to mask is extracted from FT 40.A4-A-5 and attached as Inclosure 1.

d. Vertical clearance factor -0..500 meters,  $15\mu$ ; 500-1000 meters  $10\mu$ ; all ranges greater than 1000 meters,  $5\mu$ .

3. Examples of minimum safe quadrant computations are:

a. Range 2300M, height of mask +62M

(1) Angle of site as measured at gun	+27.0 $\mu$
(2) Comp site factor from chart	+1.1 $\mu$
(3) Elevation to achieve range 2300M	+26.7 $\mu$
(4) Vertical clearance factor, minimum safe quadrant to clear mask	$\frac{+5.0\mu}{+59.8\mu}$

b. Range 1100M, height of mask 46 meters below altitude of gun.

(1) Angle of site as measured at gun  $-41.9\mu$

Incl 5 to Inc1/10

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AVGK-AF-S3

31 October 1967

SUBJECT: Procedures for Computing Minimum Safe Quadrant Elevation for the  
M42

- |                                                                                                        |                                            |
|--------------------------------------------------------------------------------------------------------|--------------------------------------------|
| (2) Comp site factor from chart, (Note: No comp site factor is used when firing below the horizontal). | 0.0%                                       |
| (3) Elevation to achieve range 1100M                                                                   | +9.4%                                      |
| (4) Vertical clearance factor to clear mask<br>Minimum safe quadrant to clear mask                     | +5.0%<br><hr/> $+5.0\% - 57.5\% = -52.5\%$ |

FOR THE COMMANDER:

1 Incl  
as

*Homer O. Scott*  
HOMER O. SCOTT  
CPT, Artillery  
Adjutant

DISTRIBUTION:

A PLUS  
1 each M42 squad

## Comp Site Factor Table

M-42 Firing Tables  
SHELL HE      FUZE PD

RANGE	ANGLE OF SITE 0°-300°	ANGLE OF SITE 300°-600°	ANGLE OF SITE 600-800°	Range (Meters)	Elev (Mils)	Range (Meters)	Elev (Mils)
0	0.0	0.0	0.0	0-----	0.0	2800-----	37.7
500	0.1	0.1	0.2	100-----	0.7	2900-----	40.3
1000	0.2	0.4	0.8	200-----	1.4	3000-----	43.0
1500	0.5	1.0	2.0	300-----	2.2	3100-----	45.8
2000	1.2	1.8	4.3	400-----	3.0	3200-----	48.7
2500	1.1	3.1	8.4	500-----	3.1	3300-----	51.8
3000	1.6	5.1	14.3	600-----	4.6	3400-----	55.0
3500	2.2	7.9	22.1	700-----	6.4	3500-----	58.4
4000	2.9	11.3	31.5	800-----	7.4	3600-----	61.8
4500	4.0	15.5	32.9	900-----	8.4	3700-----	65.4
5000	5.2	20.6	-	1000-----	10.5	3800-----	69.1
5500	6.7	-	-	1100-----	11.6	3900-----	72.9
				1200-----	12.8	4000-----	76.8
				1300-----	14.1	4100-----	80.9
				1400-----	15.4	4200-----	85.0
				1500-----	16.8	4300-----	89.3
				1600-----	18.2	4400-----	93.7
				1700-----	19.8	4500-----	98.2
				1800-----	21.4	4600-----	102.8
				1900-----	23.1	4700-----	107.6
				2000-----	24.8	4800-----	112.4
				2100-----	26.7	4900-----	117.4
				2200-----	28.7	5000-----	122.5
				2300-----	30.8	5100-----	127.7
				2400-----	33.0	5200-----	133.0
				2500-----	35.3	5300-----	138.5
				2600-----	37.7	5400-----	144.0
				2700-----	40.2	5500-----	149.7

Above values are used when firing above the horizontal. No comp site is used when firing below the horizontal!

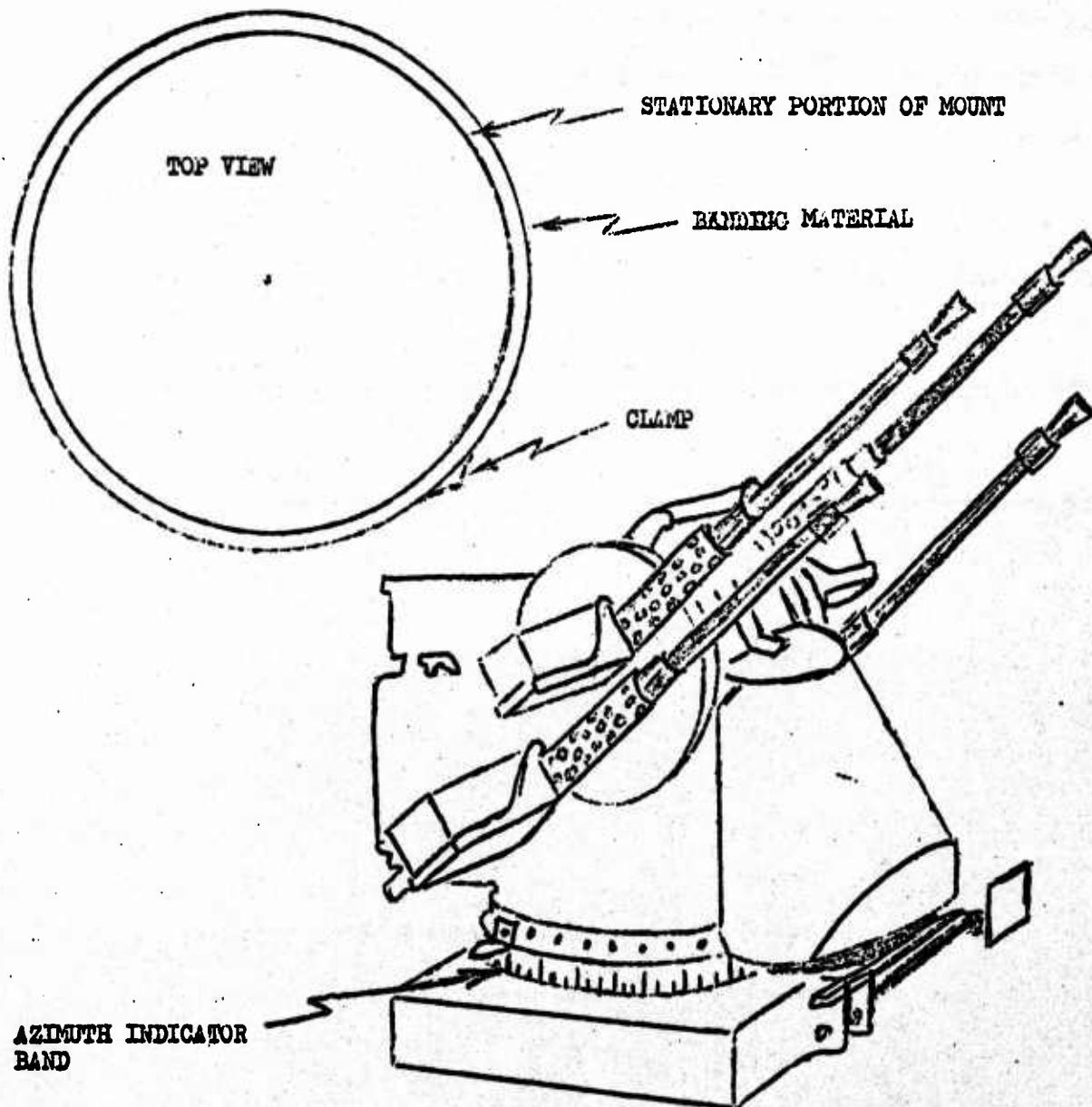
Incl 1 to Incl 5 to Incl 10

a

SPOT WELD TO STATIONARY PORTION OF MOUNT

0 : 50 ' 100 ' 150 ' 200 ' 250 ' 6100 ' 6150 ' 6200 ' 6250 ' 6300 6400

SIDE VIEW



Incl. II

89

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